

**IMPACT OF COVID-19 ON CONSTRUCTION
INDUSTRY FROM CONTRACTOR'S
PERSPECTIVE**

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IMPACT OF COVID-19 ON CONSTRUCTION INDUSTRY FROM
CONTRACTOR'S PERSPECTIVE

by

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ABSTRAK

Pertubuhan Kesihatan Sedunia (WHO) telah menyatakan penyakit koronavirus pada tahun 2019 (COVID-19) sebagai wabak berikutan penyebaran virus ini di seluruh dunia. Pandemik ini bukan sahaja mempengaruhi institusi kesihatan, malah mempengaruhi perniagaan dan organisasi, termasuk industri pembinaan. Covid-19 telah menyebabkan gangguan global yang meluas sehingga terpaksa berkurung di kebanyakan negara termasuk Malaysia sebagai usaha untuk memutuskan penyebaran virus. Sebagai inisiatif, kerajaan Malaysia melaksanakan Perintah Kawalan Pergerakan (PKP) sebagai salah satu alternatif mulai 18 Mac 2020. PKP memberikan impak besar kepada industri di Malaysia termasuk industri pembinaan. Oleh itu, masa dan kos menjadi komponen yang penting dalam senario semasa ini untuk menyiapkan projek, sebahagian besar projek yang sedang berjalan tidak dapat menyiapkan projek mengikut masa dan kos seperti yang dirancang. Oleh hal yang demikian, kajian ini bertujuan untuk meninjau persepsi kontraktor mengenai bagaimana mereka menghadapi masalah ini khususnya di Pulau Pinang, Malaysia. Untuk mendapatkan data sebenar dan maklum balas pantas dari responden, kaedah yang digunakan untuk mendapatkan data adalah dengan menyebarkan borang soal selidik kepada syarikat kontraktor. Hasil soal selidik mendapati bahawa PKP telah memberikan 6 impak utama yang terdiri daripada kepatuhan peraturan, keselamatan, waktu tambahan untuk penyampaian projek, kenaikan biaya pembangunan, pembekalan sumber manusia yang terhad dan sumber yang terhad di lokasi. Ini menunjukkan bahawa PKP telah memberikan kesan negatif terhadap projek pembinaan. Oleh itu, kajian ini penting bagi kerajaan untuk memastikan kesedaran mereka mengenai pelaksanaan PKP terhadap industri pembinaan dan memudahkan kontraktor pembinaan mengatasi enam faktor yang dinyatakan dalam masalah ini.

ABSTRACT

World Health Organization (WHO) has declared coronavirus disease of 2019 (COVID-19) a pandemic following the spread of this novel virus across the globe. This pandemic affected not only human health but also the operational health of businesses and organisations, the construction industry inclusive. The Covid-19 is a pandemic issue that is causing widespread global disruption forcing lockdowns in many countries including Malaysia as an effort in disconnecting the virus from spreading. As an initiative, the Malaysian government has call for the Movement Control Order (MCO) as one of the lockdown alternatives starting on 18th March 2020. Due to that, the MCO has given a huge impact on Malaysia's industries including the construction industry. Hence, to successfully deliver projects, time and cost become essential components which in this current scenario, most of the on-going projects declined to deliver the project according to the time and cost as planned. Thus, this study intends to explore the contractor perception on how they face this lockdown specifically in Pulau Pinang, Malaysia. Hence, the method adopted to get the data was by distribution of questionnaire to contractor's company. Results from the questionnaire found that the MCO has resulted in 6 main impacts which consists of regulation compliance, safety, additional time for project delivery, increase in development cost, limited human resources supplies and limited resource availability on-site. These results show that the MCO has given the negative impact on project success. This is important for the government to ensure their awareness on the consequences of the MCO towards the construction industry and facilitate the construction players to overcome the six factors mentioned in this paper.

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LIST OF ABBREVIATIONS

CIDB	Construction Industry Development Board
CMCO	Conditional Movement Control Order
EMCO	Enhanced Movement Control Order
MCO	Movement Control Order
RMCO	Recovery Movement Control Order
SME	Small and Medium Enterprises
SOP	Standard Operation Procedure

CHAPTER 1

INTRODUCTION

1.1 Research Background

The year 2019 was a year that saw the world turned upside down due to an infectious virus that wreaked havoc. Coronavirus disease (Covid-19) is an infectious disease caused by a novel coronavirus currently known as severe acute respiratory syndrome coronavirus 2 (Sars-Cov-2) that was originally discovered in Wuhan City, Hubei Province, China, during an outbreak of respiratory sickness cases. Covid-19 is considered as a most dangerous virus than any virus in the world. This virus has a high mutation rate, and its massive transmission infects people very quickly as it is identified that a single person infected with the virus can easily spread the virus to a dozen of people (Nightengale, 2020). About 223 countries have been affected by this deadly virus in a short period resulting in an escalation in the number of cases where 121 million confirmed cases and 2,684,093 deaths recorded up to 19th March 2021 (WHO, 2021). The World Health Organization (WHO) declared coronavirus disease 2019 (Covid-19) a Public Health Emergency of International Concern (PHEIC) on January 30, 2020. A PHEIC is defined as "an extraordinary event that may pose a public health risk to other countries through disease spread internationally and may necessitate an international coordinated response", (Durrheim et al., 2020). This statement is issued when uncommon, sudden, serious, or unexpected event arises which has consequences for public health beyond the affected state's national border and may necessitate prompt international response (Wilder-Smith and Osman, 2020). The intention of declared a PHEIC is to urge more international funding and assistance, as well as to lessen the public health and social consequences of emerging and re-emerging disease threats.

Due to the rapid spread of Covid-19 among individuals, several countries affected by the virus have implemented unprecedentedly stringent restrictions to minimize the spread of this virus and bring it under control as according to preliminary data, this virus has a high effective reproduction rate, placing older people and those with existing health issues at a higher risk of serious disease and death (Simon et al., 2021). Short to medium term lockdowns, restriction on group gatherings, closure of mass transit systems, and other travel restrictions have all been implemented worldwide in an effort to stem the spread of the Covid-19 infection (Usher et al., 2020). This implementation is believed to be the only ways to curb the outbreak since there are currently no vaccines or pharmacological interventions that can effectively cure this virus (Meo et al., 2020). China was the first country to lockdown their cities after thousands of deaths was reported. On 23rd January 2020, to minimize the number of people commuting, national traffic controls in the form of increased checkpoints at road junctions were introduced, as well as population self-isolation at home to reduce outside activities within the rest of China while the strictest control measures were applied in Wuhan (Yuan et al., 2020). Later on, the virus was detected in Europe countries as well such as United State, Germany, France and Italy which has caused those countries faced thousands of deaths in early 2020. Unlike those Europe countries, the situation in Malaysia is not as worse as them but still facing the challenges of Covid-19 case increase significantly. However, Malaysia's government has taken drastic and very effective action to prevent this virus by announced a lockdown after confirmed case reported has reach 500 (PMO, 2020f).

1.2 Problem Statement

Furthermore, Covid-19 has had a significant impact on the global economy and financial markets, in addition to being a global pandemic and public health crisis. The illnesses mitigation measures that have been taken in many nations have resulted in significant financial loss, increased unemployment, and disruptions in the transportation, service, and manufacturing industries (Pak et al., 2020). The construction industry as a significant growth driver of the economy with no exception, has also been completely shut down. All the developments and projects were facing project suspension and cancellation due to lockdown. The construction industry faces a critical challenge because the longer the suspension continues and the more workers are affected, the lower the company's output would be which possibly leading to a crisis. The worst-case scenario is that consumer demand drops in all industries, which would have a huge effect on long-term real estate and building operations (Construction Plus, 2020). Moreover, although construction activity is expected to continue in some countries in the short term, it is expected to come to a halt soon due to a variety of factors such as a shortage of subcontractors and materials, disruptions in the supply chain, and contract terminations to reduce costs (National House Buyers Association, 2020).

Like other countries, Malaysia's government has imposed a Movement Control Order (MCO) from 18th March 2020 until 3rd May 2020 to break the transmission by restricting movement and contact which stay-at-home orders were placed, recreational activities were prohibited, including interstate travel, and all businesses were shut down except for a few designated critical services and sectors of natural resources (PMO, 2020f, 2020d, 2020c, 2020e). The construction industry is one of the most affected industries in Malaysia by this lockdown. Due to MCO, most of the construction sites are

being halted because of fear of coronavirus inspection. In relation to completion and handover, the projects are already delayed. Construction player such as contractor faced a lot of challenges in project management due to MCO and current regulations by the governments. It can be term of cost, time, resource availability as well as the layoff of construction workers. This study is carried out to acknowledge the impact of MCO on construction from contractor's point of view and their expectation to overcome the problems. Apart from that, to see how Covid-19 has affect the construction industry.

1.3 Objectives

The objective of this research are as follows:

- a) To evaluate the challenges of movement control order (MCO) on project success from contractor's perception.
- b) To evaluate the impact of Covid-19 to the Malaysian construction industry.

1.4 Scope of Work

This study was conducted to evaluate the impact of Covid-19 on construction industry in Malaysia from contractor's perspective which mainly focused to contractors in Penang. For this study, a quantitative technique of research was used because it is a reliable technique for gathering data when respondents are confronted with the issue which in this study is the implication of these pandemic and MCO on project management. A questionnaire is developed, and data is collected via self-administrated survey. The questionnaire is divided into three section which is general information regarding their current project, factors affecting project success and their expectation in the future. The number of respondents is approximately 50 contractors, and the period of this study is 1 months.

1.5 Structure of Thesis

This study is divided into five chapters. Chapter 1 is a brief introduction including research background, problem statement, research objective and scope of work. Chapter 2 reviews the literature that is related to the history of Covid-19 and its long-term implication to the world. The impact of this pandemic on construction industry globally and locally are also explained in this chapter. Chapter 3 explains the methodology used in this study which cover the sampling of size and population and develop of questionnaire. Chapter 4 presents the result of the data obtained and analysis from the questionnaire, and discussion of the findings. Chapter 5 summarized the outcome of this study and provides practical recommendations for the future study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter provides the literature review of this topic. The first part discusses on the lockdown alternative in Malaysia, followed by the literature of the project success, the impact of Covid-19 on construction industry globally and the current state of the Malaysian construction industry.

2.2 Lockdown Alternative in Malaysia

The Movement Control Order (MCO) known as cordon sanitaire is the restriction of movement of people which act as a barrier to stop the spread of infectious diseases. The Malaysia's federal government has decided to implement this restriction movement order under the Prevention and Control of Infectious Diseases Act 1988 and the Police Act 1967 as a protective measure in response to the country's Covid-19 pandemic (PMO, 2020f).

2.2.1 Movement Control Order (MCO)

MCO was implemented across Malaysia, with most major industries being prohibited from operating during this period and most workers being advised to work from home or remain at home to reduce virus transmission. The MCO was implemented in three stages, with each phase allocating 14 days of quarantine time. (PMO, 2020b). There are six restrictions imposed during the MCOs period to break the chain of Covid-19 which are (PMO, 2020f);

- Religious activities, sports, social, and cultural events are all subject to complete restrictions on movement and assembly across the country. To implement this restriction, all places of worship and businesses must close, with the exception of supermarkets, public markets, specialty stores, and convenience stores that provide essential goods.
- Full travel restrictions for all Malaysians traveling abroad, as well as health checks and voluntary self-quarantine for a duration of 14 days for Malaysians returning home.
- A complete restriction on international tourists and visitors to Malaysia.
- All kindergartens, public and private schools, including day and residential schools, international schools, Tahfiz centers, and all other educational institutions at the primary, secondary, and pre-university levels would be closed.
- Closure of all public and private higher education institutions, including skills training institutes, across the country.
- All government and private buildings must be closed, with the exception of those involved in essential services such as water, electricity, energy, telecommunications, post, transportation, irrigation, oil, gas fuel, lubricants,

broadcasting, finance, banking, health, pharmacy, fire prevention, prisons, ports, airports, security, defense, cleaning, food supply, and retail.

2.2.2 Enhanced Movement Control Order (EMCO)

Starting on March 27, 2020, specific locations such as Simpang Renggam, Johor; Batu 21 to Batu 24 Sungai Lui, Selangor; and Menara City One, Kuala Lumpur were subjected to a tougher order, known as the EMCO, for 14 days as a large cluster was identified within the region, requiring the government to perform a comprehensive COVID-19 test on all residents and to stop the virus from spreading out of the area (Saiful Sham, 2020). The government has declared this control to help authorities track cases unit by unit during the EMCO period and to restrict the spread of Covid-19. As a result, the government has split the afflicted area into three colour zones (red, yellow, and green) to show the severity of the crisis depending on the number of active Covid-19 cases. The red zone designates an area with more than 41 instances that will be declared as an EMCO area for fourteen (14) days or until the cases are decreased to a manageable number. Meanwhile, the yellow zone represents areas with 1-40 cases reported, while the green zone represents areas with “zero” cases (Esa et al., 2020). A new standard operating procedure (SOP) was implemented, with the following orders (Saiful Sham, 2020):

- During the EMCO period, all locals and visitors who have visited both regions are not permitted to leave their houses.
- Non-locals and visitors are not allowed to enter both areas during the period of EMCO enforcement.
- All businesses have been closed.

- During the 14-day directive, the authorities will provide adequate food supply to all people.
- Within the area, a medical base will be constructed.
- All access roads to the area have been shut down.
- The Royal Malaysian Police (PDRM), Malaysian Armed Forces (ATM), Malaysian Civil Defence Force (APM), and Malaysian Volunteer Department (RELA) would be in charge of the entire area to ensure compliance with this order.

2.2.3 Conditional Movement Control Order (CMCO)

The Conditional Movement Control Order (CMCO) was a relaxation of MCO regulations aimed at reopening the national economy in a regulated manner. All educational institutions, social, and cultural activities will be forced to cease under these new CMCO measures, but economic activities will be allowed to continue under standard operating procedures. The regulations of the CMCO as stated in Prime Minister's speech on May 1st. 2020 included (Bernama, 2020b):

- Restaurants are allowed to operate as long as they follow the business standard operating procedure, which involves social distancing and keeping track of clients' names, phone numbers, and visit dates.
- Cinemas, karaoke, reflexology, entertainment, night clubs, theme parks, Ramadan bazaars, Aidilfitri bazaars, shopping carnivals, and other types of conferences and exhibitions are prohibited.
- Football, rugby, swimming, and all indoor and stadium sports events are prohibited since they involve huge crowds, bodily contact, and other dangers of infection.

- Outdoor sports activities which do not involve body contact and in small groups such as badminton or tennis outdoors without an audience, jogging, cycling, golf and running comprising of not more than 10 persons are allowed on condition social distancing is practised.
- Social, community and cultural events which involve large gatherings such as feasts, open houses, break-of-fast events, concerts, cultural shows, monthly assemblies of government departments and the private sector, as well as all types of official events and assemblies are not permitted.
- Inter-state travel, including trips back to hometowns for the Aidilfitri festival holidays, is prohibited, except for work-related travel and to return home after being stranded in hometowns or abroad.

2.2.4 Recovery Movement Control Order (RMCO)

The Prime Minister declared on June 7, 2020, that the CMCO would end on June 9 and that the country would enter the RMCO process from June 10 to August 31, 2020 (PMO, 2020a). This meant that constraints introduced during the MCO period were eased, and some social, educational, and business practices were now permitted to take place, as long as citizens followed the strict SOP that is currently being debated. The loosening restrictions included (Loo, 2020):

- Commercial practices such as buying and selling outside the premises are also permitted. Visits to museums, indoor busking, self-service laundries, outdoor fishing, including commercial fishing ponds, and filming are all examples of this.
- A few sports and leisure activities that do not require touching, such as bowling, badminton, archery, and shooting, can reopen with strict SOPs enforced.

- Domestic travel is now permitted as long as the new standard is followed (wear face masks and use hand sanitizers).

MCOs, as well as CMCOs and RMCOs with strict SOP, have had a significant effect on the construction industry, whether it be established companies or small and medium businesses. The effects affect not only the financial aspects of the project, but also the project's progress and results. As a result, project efficiency has decreased, and completing a project appears to be difficult at this time.

2.3 Project Success

In general, there is no agreed-upon definition of project performance. The phrases "project management success" and "project success" are also used interchangeably. The productivity in which a project was able to meet its goals is a measure of project management performance. Project success, on the other hand, is defined as the degree to which project deliverables are measured in terms of benefits and stakeholder satisfaction, or the amount to which the project's ultimate aims are achieved (Siles, 2019). From Bannerman (2014), project success has been discussed in numerous ways in the literature, including completion "on schedule, within budget, and to specification," success of the product delivered, and success in meeting the project's business objectives. According to Baker, Murphy, and Fisher (1988), project success is a matter of perception, and a project is more likely to be regarded as a "overall success" if it achieves the technical performance standards and/or mission to be performed, and if there is a quantifiable return on investment (IJBM, 2009). It is generally agreed that a project is good when it is completed on time, on budget, and to the satisfaction of all stakeholders (Le, 2020). These parameters are known as the iron triangle (Albert et al., 2017).

In addition to the factors listed above, there are a number of other factors that contribute to project success, which are determined by the particular goals for each project, such as protection, leadership, communication, coordination, cognitive ability, and so on. The terms "success criteria" and "success factors" are not interchangeable. Essentially, the project success criteria are a parameter that is used to determine whether a project is successful or unsuccessful; these are contingent variables that assess success by reflecting on “what to achieve” in the project. Meanwhile, the project success factors are components of a project that, when affected, increase the likelihood of success and function as independent variables that increase the likelihood of success by reflecting on ‘how to achieve’ project success (Esa et al., 2020). In another words, the project success criteria are the input by which a project's or business's success, or failure would be measured, while success factors are the inputs to the management system that contribute directly or indirectly to the project's or business's success (Cooke-Davies, 2002).

Overall, success in a construction project involves achieving the benefits and meeting the needs of recipients, stakeholders, sponsors, and funding agencies, in addition to meeting the timeline and budget goals. Therefore, in this study, researcher will focus on project success factors as the study's findings will add to the body of information for the industry and the government about the factors that influence the MCO's ability to deliver a successful project which it will be useful to them in overcoming the issue based on the factors identified in this study.

2.4 Current Scenario of Global Construction

The severity of the public health issue, as well as the timeliness and strictness of confinement actions, have all played a role in the construction industry's lockdowns. In certain countries, construction operations were judged obligatory. Construction of

emergency facilities and hospitals was crucial in China and Italy, for example. As part of the containment measures, construction sites in other nations were shut down totally or partially. Maintenance of the country's national roads has been deemed an important service in South Africa (Schafer and Touroude, 2020). In places like Austria, Barbados, and the Russian Federation, where building sites had been shut down, they were among the first to reopen in the early stages of reactivation plans after the first wave.

Several research have analyzed the impact of Covid-19 on the construction industry. Of these studies, a study by Pathirana (2020) addressed that construction company in Sri Lankan faced payment issues such as paying wedges as some of them still not getting paid by client after work completion. They also faced difficulty in maintaining their cadre due to the restricted crossing over district. Another study by Araya (2020) stated that the spread of COVID-19 has wreaked havoc on the construction industry, slowing and halting projects in the works, disrupting the supply chain, and creating a labour shortage due to quarantines. From Gamil and Alhagar (2020), plan suspension, cost overrun, time delay, labour impact and work loss, and financial impact are the most major issues that influencing construction sectors. Ogunnusi et al. (2020) stated most of the on-going construction have been delayed and owing to a lack of financing, a construction company could be in debt or face bankruptcy.

According to the Associated General Contractors of America's survey, 16 percent of members reported shortages of supplies, components, or equipment, including workers' personal protective equipment, and 11 percent reported a shortage of craft workers as people self-quarantine or remain at home to care for others (Shaw, 2020). Many countries, including China and Italy, have slowed, or shut down their manufacturing industry, resulting in forecasts of large reductions in the output of a wide variety of goods, from steel to cement. Contractors that rely on Chinese-made products

and services are expected to experience higher costs and longer project completion times as a result of construction material shortages. Rates will grow as a result, and more projects will be cancelled (EIC, 2020). Construction companies have been hit hard by the crisis, with many suffering cash flow problems. Reduced spending and consuming capacity, operational constraints, and the fear of spreading the disease have all played a part. Liquidity shortages are jeopardizing the viability of SMEs, particularly in emerging nations, and many are on the verge of bankruptcy if the challenges persist (IOE, 2020).

2.5 Current Situation in the Malaysian Construction Industry

The MCO, as successful as it was in stopping the virus from spreading, had a negative impact on the construction industry. The Covid-19 outbreak has had a long-term effect on Malaysia's construction industry, which lost RM18.5 billion in the first phase of the MCO between March 18 and April 28, 2020 (Naz Harun, 2020). When the industry was not permitted to function, the losses were calculated based on the value of wages, construction materials, equipment rentals, project management, and benefit. This includes an RM3.3 billion reduction in personnel and labor costs, as well as an RM4.6 billion reduction in the consumption of building materials (Naz Harun, 2020). Recognizing the negative consequences of a prolonged closure of the industry, the government has permitted some construction activities to resume operations from April 13, 2020 onwards, even though the MCO is still in its early stages (CIDB, 2020). However, some of the construction projects that have been halted since the first phase of the MCO are still closed after the announcement of permission to operate. From April 20 to September 20, 2020, the Construction Industry Development Board inspected 7,590 construction sites throughout the country and discovered that 149 had yet to resume

operations. 45 of the 149 sites remained closed due to ongoing financial difficulties (Naz Harun, 2020).

On 1st May 2020, Prime Minister announced major changes to the 4th Phase of the MCO which is currently in effect throughout the country until 12 May 2020. In essence, all companies will be allowed to operate starting on May 4, 2020, with the exception of those included on the List of Prohibited Activities. Later, 27 new Covid-19 cases were discovered on May 2, 2020, at a construction site on Jalan Ampang (Bavani M, 2020). Hence, government has declared businesses that are allowed to operate, include the construction industry, must strictly follow the standard operating procedures (SOP) under Act 520 established by the relevant regulatory authorities (Skrine, 2020b). According to the SOP, developers and contractors are solely responsible for ensuring that their site personnel and employees follow all terms and conditions, with a particular focus on worker health and hygiene. Furthermore, contractors who fail to follow SOPs will face consequences under Act 342 (Prevention and Control of Infectious Diseases Act 1988), including being blacklisted by CIDB and facing legal action (Shuaib, 2020).

The construction SOP emphasizes social distance and ensuring a high degree of workplace safety and health. The government has highlighted 15 actions in the SOP for the construction sector, including (1) Workforce management (2) Worker's transportation (3) Workers' movement (4) Transportation of construction materials and supplies (5) Awareness of and compliance with the Construction SOP (6) Covid-19 preventive steps are being supervised by a coordinator who has been appointed (7) Developing an Emergency Response Plan (8) Implement contact-tracing in collaboration with the appropriate authorities (9) Implementing Covid-19 protective steps at the building site or premises' entrance (10) Implementation of Covid-19 preventive measures during the execution of construction works (11) Decontamination of toilets (12)

Management of workers' break time (13) Reminders and notifications while returning from work (14) Decontamination of workers' quarters at a construction site or a business location (15) Maintenance of the site cleanliness and workers accommodation (Skrine, 2020a).

Construction has significant multiplier effects that influence the growth of other economic sectors such as manufacturing, transportation, and finance. As a result, the construction industry's delays have had a huge effect not just on the sector but also on other associated industries (CIDB, 2020). Construction player such as contractor as well faced financial difficulties and delays in project completion for certain projects because they were unable to work during the MCO period. Owing to the restricted movement from one location to another, the delay has impacted not only the project progress on site, but also the suppliers of materials and machinery which has made things difficult for the construction industry. Furthermore, contractors depend heavily on a foreign workforce, and it's possible that some of the foreign employees will return to their home country due to fear and uncertainty (National House Buyers Association, 2020). The small number of staff allowed on-site, combined with the social distancing, had a significant effect on the project's progress and productivity. To improve the efficiency, safety, sustainability, and productivity of their construction projects, construction industry players must embrace technologies such as industrialized building systems, mechanization, and automation. They would be able to recruit more professional local employees and improve their productivity as a result of this (Bernama, 2020c). This research is essential to be explored in order to obtain more detailed details about the current state of the construction industry in Malaysia and the implications that contractors are currently facing.

It can be concluded here that the current pandemic has a huge impact on the construction industry. Pandemic and lockdown have caused losses to the construction industry due to the closure of construction sites in an effort to curb the spread of Covid-19. Besides that, pandemic also caused difficulties such as project delay, shortage of construction material, cost increment and worker layoff to construction players, especially contractors. Thus, this study is done to evaluate the challenges faced by contractors in Penang in handling project during pandemic and changes brought by Covid-19 towards project management at construction site. The method used in collecting data on this study are further discussed in Chapter 3.

CHAPTER 3

METHODOLOGY

3.1 Introduction

The approach, strategies, and procedures utilized to attain the study's aims and goals are described in the research methodology. As a result of the research approach, the study gets more rigorous, and the study process becomes more focused on reaching the objectives. This chapter will go through the research approach that was used in the study. The study methodology and procedures for acquiring data and knowledge using specific methodologies have been thoroughly designed by the author.

Based on the theory discussed in Chapter 2 related to the impact of Covid-19 on the construction industry, it can be stated that several factors such as budget, completion period are critical in ensuring the performance of a project without losses or problems. As a result, a questionnaire study was conducted on local construction contractors who have been registered with The Construction Industry Development Board Malaysia (CIDB) in order to evaluate the factors that affecting project success during this pandemic.

This chapter will discuss the research population and sample, structure of study, data resources, study instrument, procedures as well as analysis of quantitative and qualitative data. The research methodology and strategies devised to obtain information and data to achieve the objectives and goals of the study are as described in the following Figure 3.1.

STUDY PROCESS FLOW CHART

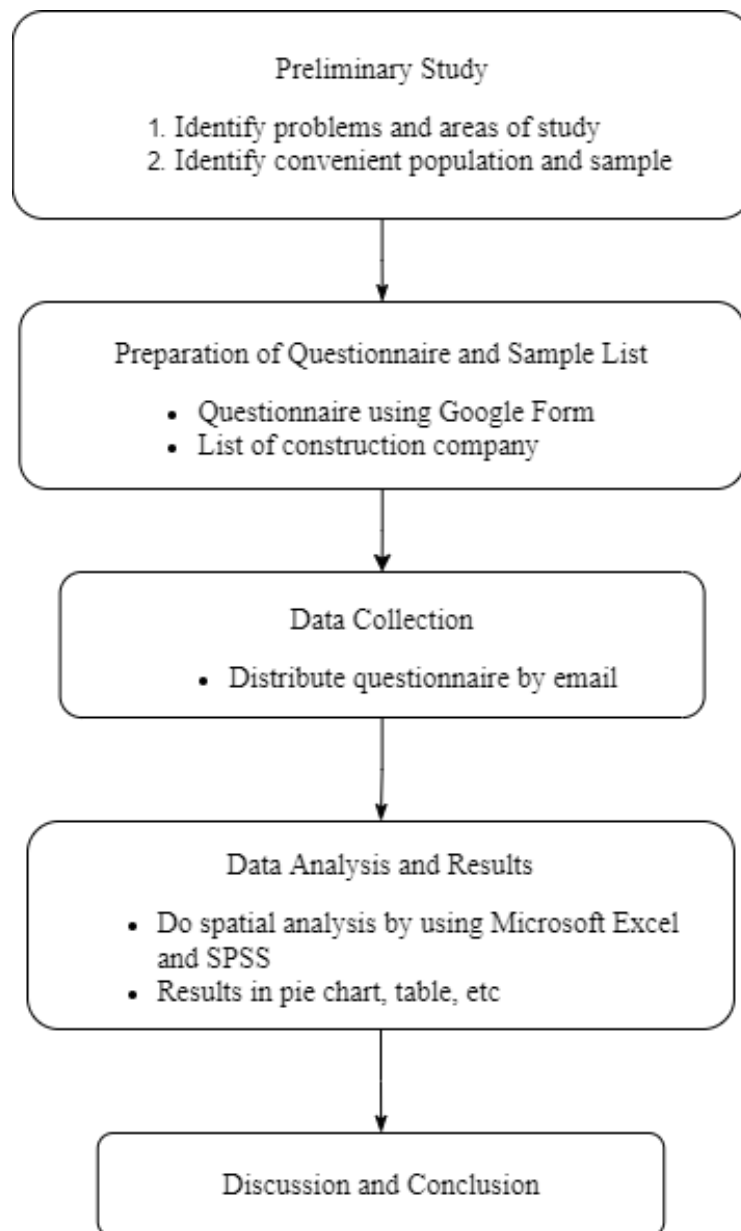


Figure 3.1: Flow chart of the study process conducted.

3.2 Quantitative method

The main methodology used in this research is a quantitative method based on a survey given to respondents which in this case consists of contractors. A qualitative method chosen for this study is due to the appropriate method in collecting the data where the respondents experience the issue or problem under the study and the data was produced subjectively from their minds. According to Ponto (2015), survey research is defined as “the collection of information from a sample of individuals through their responses to questions”. Through this method, researchers do not need to obtain data from the entire population to be studied but only need to study some elements of that population. The results obtained from this approach are good and fast. The format of the questionnaire provided is to obtain the following information:

- i. The basic details of the respondents which is regarding the background of the current project by the company involved.
- ii. The factors affecting project success from contractor’s point of view.
- iii. Contractor’s expectation on construction management in the future.

For the purpose of conducting a scientific study, the selection of respondents for the survey is important to ensure that the data obtained are accurate and appropriate to the study conducted. Given that the main issue in the preparation of this research project is the impact of the current pandemic on the construction industry from the point of view of contractors, then a questionnaire was given to the construction contractors involved in the construction site.

3.3 Research population and sample

A population is a group of people, items, or occurrences with comparable features that may be examined. Although each individual or object in a community is likely to differ in numerous ways, they must share at least one trait (Yusof, 2004). While sampling is the taking of a fraction of a population as representative of that population. The study's population consists of Penang construction players, and the strata is comprised of contractors. For each stratum group, basic random sampling is utilized for subsample selection. This research was carried out in Penang, where new construction projects are currently being developed in various locations.

Prior to conducting the survey, the researcher established the respondent qualifying criteria, which included being a contractor, having an active project, being involved in a construction project in Penang, and being registered with CIDB. Firstly, the researcher had list out a contractor companies through CIDB website, then the researcher browsed the selected company's website to identify their on-going project. After the conditions were met, the invitation email was issued to the respondents via their CIDB-registered email address.

The population of the contractor company in Penang that researcher obtained from CIDB website are 500 companies. While sampling, the author has taken 50% percent of the populations, thus total of 250 companies were involved in this questionnaire and the form of sampling is based on Simple Random method.

3.4 Data resources

The data sources used in the analysis of this scientific study are from the primary data. Primary data are scientific data obtained through the distribution of questionnaires

to study respondents. The only respondents involved were construction contractor firms. These data will be collected for analysis to obtain a conclusion in this scientific study.

3.5 Research Instrument

An exploratory study has been conducted in this study by using self-administrated survey with the contractors based on their experience during the MCO. Questionnaires is a popular form of research used among researchers because questionnaires can cover a wide range of topics, are simple to develop, and provide an accurate, quick, and time-saving method of gathering qualitative and quantitative data. The structure of this questionnaire is divided into three sections, namely Section A, Section B and Section C.

Section A contains three questions involves the social demographic which includes working experience in the construction field, current project, current project status in terms of schedule and cost. Respondents are required to mark (/) on the answer checkbox or state the answer in the space provided.

Section B and Section C includes questions that will answer the questions of this study. The questions posed are the result of information obtained from literature review and problem statements and time, cost, resource availability, human resource, regulatory compliance and safety prevention were all variables generated by past project success factors. Section B contains seven questions while Section C contains 2 questions. Sample of questionnaire for this study is as attached in the Appendix.

3.6 Data analysis

Data collected through a set of questionnaires were processed using IBM Statistical Package for Social Science (SPSS) version 22 and Microsoft Excel. Computerized data analysis method using this software will make it easier for the author to accurately analyse the data obtained as it covers aspects of comprehensive quantitative

data analysis besides of save time. As for the answers in the questionnaire form in the form of filling in the blanks, a qualitative analysis was conducted. The results of the study are presented in various ways such as through pie charts, tables, summaries and so on. Next, the results of the presentation can be used to explain the real situation regarding the study that has been done.

It can be concluded here that; this study was carried out based on quantitative method which by using questionnaire to collect data from respondents. The respondents that involved in this study is contractors who have active projects in Penang and registered with CIDB. The questionnaire contains three sections which is demographic, consequences of Covid-19 and impact on project management. The data obtained from the survey is then analyzed using SPSS and Microsoft Excel and discussed by relating it to literature review in Chapter 2. The analysis and discussion on this study are further described in Chapter 4.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Overview

This chapter discusses the results of data analysis on the challenges of project success that contractors faced in handling projects during pandemic with aims to look at the impact of Covid-19 on the construction industry. This chapter will be divided into several sections so that it is easy to understand through an orderly arrangement. This section is the most important part where the focus is given to analysing the data and information from the respondents' feedback, namely the construction contractor. Therefore, the problem and the actual situation of the current project status and project management at the construction site can be determined. The final part will detail the findings of the study based on the analysis conducted. These findings will serve as a basis and guide for the formation of recommendations that will be presented at the end of this study.

4.2 The Responses of the Questionnaire Survey

A total of 250 questionnaire invitations were sent out through the Online platform using the Google forms. Out of that invitations, 50 responses were obtained and recorded as valid responses from the questionnaire survey. In Figure 4.1, the distribution of survey responses from email recipient are illustrated in terms of numbers and percentage, respectively.