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## Effect of Covid-19 Pandemic on Construction Industry Management

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### Abstract

The coronavirus pandemic has had a significant impact on various industries around the world and its effects vary depending on the location of the project and the status of the overall construction industry. Construction companies have had a hard time dealing with the uncertainty of working with a team of contractors, who are now tasked with balancing their team's safety with maintaining a sense of normalcy, as a result, the construction industry has experienced varying levels of production and employment. If a project is delayed due to the pandemic, it would have a negative impact on the entire economy. This issue can be identified and addressed through various strategies and measures. The best strategy for reducing the pandemic's impact is to uncover the underlying problems created by COVID-19. As a result, stressing COVID-19's impact. This review paper focuses on the effect that covid-19 pandemic has on construction project management and the resulting struggle and solutions of such problems. The construction industry is harmed by COVID-19 in both developed and developing countries, according to the findings. As a result, specified safety standards must be implemented at construction sites, and a crisis management framework must be used to boost construction output during the pandemic.

**Keywords:** covid-19, global pandemic, construction management, construction industry.

### Introduction

The construction industry is crucial to any country's economic, social, and political development (Zamani et al., 2021) and employs around 18 million people in European Union (EU) member countries and is responsible for up to 9% of the EU's total GDP. In total, the construction industry employs 7% of the global workforce and contributes 13% of global GDP (Umar et al., 2022). The pandemic had swept the globe, wreaking havoc on the building industry. All construction operations have been halted as a result of the epidemic. Because the physical activity must be performed on-site, working from home may not be feasible. If any big construction projects were to be delayed, it would have a significant influence on economic growth (Zamani et al., 2021). As of April 2020, Covid-19 infection poses a threat to almost 7 billion people worldwide, with an estimated 1.3 million people infected and over 70,000 deaths (WHO 2020a) (Babatunde et al., 2021). And as January 2021 reports show that Over 200 countries had been infected with the virus, 91.5 million people were affected, with 1.96 million people dying. According to reports, the virus can be spread from person to person and induce signs such as fever, dry cough, tiredness, and shortness of breath. The outbreak's rapid spread and long incubation the fast spread of the pandemic and the long incubation time have been the most crucial aspects (Pamidimukkala et al., 2021). The advent of Covid-19, as well as the rapidity with which it spread across continents, has prompted severe international public health concerns. Since the outbreak, no country has been immune to the pandemic, which has caused unprecedented infection over the world, with global confirmed cases fast increasing. (Babatunde et al., 2021).

Due to many preventive regulations, the chain of supplies for building materials, equipment and plants was disrupted, this is due closure of country borders and the of traditional transit and traffic routes. The labor and material shortages slowed or even halted a contractor's progress and timely performance, even though the contractor could set and keep to a firm deadline for the project's completion, as well as responsibility for delays caused by a

liquidated damage provision in a contract. This is an issue not only for contractors, but also for clients, owners, all other subcontractors, and society as a whole, who are all participating in the same engineering and building project (Haas et al., 2021).

### **Methodology**

Reviewing related literature (journals, articles, and papers) on the effect of covid0-19 on construction management was the research method used for this paper. Web of Science SM, WHO, PubMed, Google, Google scholar, and document reference lists were used to gather information from peer-reviewed publications, journals, and reports.

## **Results And Discussions**

### **Workforce**

One of the most variable resources involved in construction projects is the construction labor. The shortage of competent labor is one of the most significant issues that the construction industry and its businesses face in this respect (Araya & Felipe, 2021). Covid-19 spread so quickly that the government has been obliged to declare a state of emergency, workers are more likely to spread the sickness when they come into contact with one other since the disease is caused by a viral infection. Construction workers are unable to come to the building site, as a result of the lockdown. Even when some the lockdown measures were easy, many workers refuse to come to work due to fear of contacting the virus (Biswas et al., 2021). According to the study, project managers did their best to address issues such as worker availability and accessibility, a lack of workers, and more than 200 workers were sacked as a result of Nepal's statewide lockdown policy (Wang et al., 2020). Because of the mobility control order, human resources have taken a negative turn during this pandemic (Esa et al., 2020). A substantial number of foreign construction workers that reside in the dormitories tested positive with COVID-19, according to survey respondents, resulting in a labor scarcity. When a person is discovered to have tested positive, all the people that have been in contact with the person are to be isolated at specialized building, which in turn will mean that less people are able to come to work. Additional factor contributing to the labor scarcity was the fact that foreign employees were not permitted to get out of their dorms for another two months after the lockdown was released. The actual pool of foreign employees went back home countries during the epidemic also is a reason to the labor scarcity (Ling et al., 2022).

### **Time**

Traditionally, a construction business can predict the amount of work required to accomplish a project with a high degree of certainty. Man-hours, days, and weeks are examples of time-based indices, can be used to produce this estimate. When the worth of a project is compared to the number of days it takes to finish it, the time value of the job is revealed. This correlated the length of time it took to accomplish a given project and the monetary value of its output, similar to a factory worker is evaluated on their hourly production (bell et al., 2022). According to a case study, COVID-19 had a detrimental impact on the project management part of a job's productivity. This involves delays in the project's timeline and budget, and many of these delays are beyond anyone's control. The shutdown in

March 2020, according to a large number of engineers and managers, caused several task schedules to be modified. Because they had to halt working on all of these activities during the shutdown, many other components of the job, including funding, were hampered (Gonzalez & Emily, 2020). The way the building industry was operated had to be changed to include contingency time (Time overrun), where it had to accommodate all of the requirements for dealing with all of the unexpected crises. During the crisis, construction planning and schedule are likely to be considerably impacted. As a result, planners and schedulers should have contingency plans in place in the event of a system failure (Gamil et al., 2020). According from southern India show that as a result, the project's cost has increased, and the project's completion date has been pushed back (Krishnan et al., 2021). According to survey respondents, projects were delayed for 4 to 24 months, with an average of 12 months. Projections were made that nearly half of the projects will take 40% longer to be completed than the initial projection, with the shortage of labor being the primary cause of the project delays (Ling et al., 2022).

### **Resource**

According to a report, budget overruns of 5% or more were projected in over 90% of the projects, indicating major cost overruns. Contractors interviewed said they dealt with the manpower shortfall by using more expensive labor subcontractors. and that the supply of migrant construction workers was insufficient to match on-site demand, causing worker costs to rise. The majority of principal contractors used labor subcontractors to find workers, and the subcontractor could not complete the number of employees that had been arranged on. Employees shortages are a severe problem since they raise labor wages, causing cost and schedule overruns in construction projects (Ling et al., 2022). One of the most difficult tasks for contractors is keeping track of project costs and cash flow. Each project's total duration and expense have grown as a result of COVID (Sierra & Francisco, 2021). According to research the time was extended in order to reduce the money necessary each year. However, due to the increase in working time, there is a possibility that the total cost required exceeds the fixed time (Setiyono et al., 2022). According to the report, cost overruns are caused by errors in ordering, delivery, and implementation of materials, a labor shortage and poor quality as a result of a lack of expertise, the cost of purchasing additional occupational health and safety material related to Covid-19, the suspension of work due to the pandemic, a lack of expertise to manage the cost overruns, and delays due to poor planning (Hesna et al., 2021). In a survey, respondents stated that they are experiencing cost increases for their house project, ranging from RM 100,000 to RM 300,000, with two interviewees reporting a significant amount increase because a large project which included the creation of housing in a public project under the Armed Forces (Esa et al., 2020). According to a report, many businesses have been compelled to consider lowering the number of staff, slashing wages, and deferring recruitment until the pandemic's impacts have passed. A large number of businesses expect they will lose money this year, while a smaller number feel they will earn a profit. In addition, they had to deal with insolvency and contract breach compensation for some of them. Businesses are strained by

employee salaries, rent payments, insurances, account payable settlement, and loan payback. (Zou et al., 2020).

### Management

Construction projects have been slashed and up to 34% of labor has been let off as a result of the pandemic epidemic. Due to personnel salaries and site administration, the majority of contractors lost money. More than 7,000 construction employees are affected by the epidemic, and the industry is suffering significant losses as a result of project delays. Due to changes in work patterns of various businesses, a crisis management framework and safety health practices for construction people have been promoted, in order to overcome significant challenges and crises in the construction sector (Iqbal et al., 2021). A project timeline is a list of tasks that must be completed from the start of the project through the planned completion date. According to a report, the shift in project timeframe occurred because building activities ceased under the Movement Control Order, causing project delays; another aspect is late authorization. Companies are experiencing a scarcity of skilled personnel, the majority of whom are international workers. COVID-19 caused many foreign workers to return to their home countries. Existing and new foreign workers, however, were unable to enter Malaysia due to government restrictions on foreign worker entry. Construction work was delayed due to a lack of workers. Payments for projects are frequently made in stages. Payment would be made once the company has claimed the work phase of the finished project for government contracts. The payment of claims has been delayed due to a slew of factors of disruptions in government operations under the Movement Control Order, according to contractor comments. "The company is waiting for payments from the government that are 1 to 2 months late, generating capital turnover issues." "The company's profitability are declining due to a lack of projects." Corporation are also having issues with the government requesting overdue payments for government projects. As a result of these factors, businesses are unable to pay their staff." Increased project prices, reduced labor, logistics, and a reduction in the number of projects are just a few of the issues that a construction business has to deal with (Zamani et al., 2021). According to a study, because of the absorption of social space between the employees, various pandemic-related delays circumstances, and supply chain challenges, the pandemic's impact on Romania's construction industry resulted in cost overruns on ongoing projects. Anti-COVID-19 legislation have caused delays in the construction industry and the actions implemented (such as shutdown of activities) have been observed to have a minor to moderate impact on the market (Leontie et al., 2022). According to a study, there were, and continue to be, various factors that contributed to the decline in construction industry output. The scarcity of personnel as a result of the health crisis and the scarcity of labor from overseas is one of the most crucial. Issues with the availability of construction materials integrated in the structures play an important function. As a result of this scenario, certain contracts were suspended or subsequently commissioned (Nový et al., 2022). The pandemic has had the greatest influence on the construction industry's safety and risk management, while the financial market has had the least impact. The findings revealed a considerable

variation in how the pandemic's impact was documented in the public and private sectors. When compared to the private sector, the pandemic had a greater impact on the public sector (Al-Mhdawi et al., 2022). According to a study the implications of COVID-19 rendered project execution "burdensome," according to all project participants. Current contracts do not include clauses that appropriately address the pandemic condition (Rehman et al., 2021). The pandemic is interpreted as a force. In almost all contracts, FIDIC included, force majeure allows constructor to seek reimbursement for time lost as a result of the suspension of work. However, it does not provide them the right to monetary recompense. unless the parties agree otherwise (Husien et al., 2021).

### Methods to address to address the Covid-19's impact on the construction industry management.

Project workers, both experienced and unskilled, are the cornerstone of the construction business, all required precautions must be taken into account and all possible prospects deployed to ensure the safety of the workers against COVID19 and its potentially fatal health implications (Husien et al., 2021). To properly contain the coronavirus, employers and employees must communicate effectively. Employers are required to design a communication strategy that is well-defined to communicate any alterations in laws to all of their staff in a language that they can comprehend, as well as provide assistance in transitioning to the new practices. Workers must notify their employers of any probable symptoms, dangers, or pandemic exposure on the workplace (Pamidimukkala et al., 2021). Managing the services inside the site in an innovative way, such as adopting strict health policies, the use of protective masks, encouraging employees to maintain a healthy body and use disinfectant, good air system, and improved health care, is needed to meet the requirements of the safe work site conditions. Construct open air meal locations and post warning signs concerning the issue of physical distance. In addition, it may be necessary to limit the number of personnel on the job site by rotating work shifts (Husien et al., 2021). In reaction to the pandemic and to increase their safety, a significant number of non-site professionals were able to shift to working from home. Staff anxiety and dread about the epidemic can be stressful and have a negative impact on their health. Employees must be able to recognize and distinguish stress signs such as irritability, anger, sadness, depression, confusion, nervousness, and/or anxiety, as well as Inability to focus, sleeplessness, and a lack of motivation (Pamidimukkala et al., 2021). As previously stated, Furloughs and layoffs were expected in large numbers, not just in the construction industry, but also in other industries. Many organizations and people suffered as a result of the circumstances, but many others benefited. More specifically, while there had previously been a scarcity of skilled people in the industry, there was an unexpected surge in the number of skilled workers looking for work. (Alsharef et al., 2021). To enforce safety precautions during construction, The top management of construction projects must take a zero-tolerance stance. Sick personnel should be segregated and placed on isolation for at least two weeks, and top stakeholders should educate employees about COVID-19 symptoms like coughing, fever, sneezing, and difficulty breathing (Iqbal et

al., 2021). To settle disagreements over deadline extensions and financial commitments, Contracts must be evaluated, and local legislation and standard contracts must be amended. All causes for the delay and cost increase must be provided by contractors. Finally, contractors with international projects should contact with an international law specialist to develop an agreement approach which is compliant with the worldwide problems created by the Coronavirus pandemic (Husien et al., 2021).

### Conclusion

COVID-19 is expected to have long-term effects, according to the World Health Organization (WHO). To combat the pandemic's influence, countries will need to continue the control-resumption-control cycle until it is fully gone. This study looked into the effects of the COVID-19 epidemic on the building industry, as well as ways to mitigate COVID-19's detrimental impact. COVID-19 is affecting the construction sector, according to the findings, by causing shortage of workforce, the extension of project timeline, the increase in the cost of project, the tensions to manage many uncertainties it has brought on the construction management. Construction stakeholders provided occupational health and safety equipment and psychological assistants to their employees to ensure they feel comfortable to work and the cutdown the issues of shortage of workers due to the pandemic. The issues of the contract are reevaluated and the cause of increase of cost identified. This research is critical for top management in the construction industry to grasp the unexpected and uncontrollable epidemic. It will aid in the improvement of the plans for the future as well as the creation of a fresh strategy to deal with any unexpected events. Finally, based on this research topic, further research can be made to find more to obtain more results.

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