

Factors Affecting Construction Project Completion on Time in Oil and Gas Sector in
Kerteh, Terengganu during Covid-19 Pandemic

By

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DECLARATION

The author hereby declares that this project paper is the original study undertaken by her unless stated otherwise. Due acknowledgement has been given to references quoted in the bibliography. The views and analyses in this study are that of author's, based on the references made; and this does not constitute an invitation to use this study as a technical tool for management purpose.

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Abstract of the project paper submitted to the Senate of Universiti Tun Abdul Razak in partial fulfilment of the requirements for the Master of Business Administration.

**Factors Affecting Construction Project Completion on Time in Oil and Gas Sector
in Kerteh, Terengganu during Covid-19 Pandemic**

By

Nazman Idris Bin Mohd Aman

The present report is a comparative study on the factors (primarily the COVID-19 pandemic) that how it has affected the oil and gas sector or companies (based in *Kerteh, Terengganu*) while completing their construction phase. This study will help us in investigating the causes and other factors in the delay of the construction projects in the oil and gas sector of Malaysia. However, many studies were conducted before, just to evaluating the main reasons behind such delays and most of them found out the COVID-19 is the prime factor. In the initial starting of the research report, Chapter 1: Introduction will provide a basic overview of the oil and gas sector. For example, how much the sector influences the economy of the world and as well as the respective country (here Malaysia). Moreover, this section will include objectives and the researcher questions for which the researcher is conducting this research. Further in Chapter 2: Background and Literature Review, the researcher will try to answer the objectives and research questions, and in order to do this researcher will look out for various sources such as books, journals, and internet. By doing so, materializing this paper with evidence will become easier. The report will demonstrate several significant factors which are putting an impact on the construction company, COVID-19 as the major one. Thus, the literature review will provide a clear insight into the elements that are important and need to be considered for executing the plans and procedures related to construction in the oil and gas sector. As we proceed further in Chapter 3: Procedure: This section will include the methods and methodology that are required for accomplishing the research in an effective manner. Moreover, in Chapter 4: Results, with the help of surveys and the results accumulated, the researcher will find out the degree of agreement in terms of the perception of various respondents. Even more, the results and values obtained from this research report could be valuable as they can use this for making proper planning for their constructional projects. Lastly, in Chapter 5: The conclusion and recommendation will be the final closure of the research report. However, there were many reasons that put an effect on the activities of construction work such as loss of efficiencies, no proper coordination between contractors and subordinates, cost impacts, and many more.

CHAPTER 1

INTRODUCTION

Currently, the entire world is witnessing the effects of Coronavirus disease. In late 2019 i.e., the month of December, the people of China witnessed the outbreak of mysterious pneumonia. The main factors through which the disease was diagnosed was characterized by fever, dry cough, and fatigue. Soon after the initial outbreak in the Wuhan City of China, the regulatory bodies overruled lockdown and social distancing. COVID-19 drastically impacted every sector of society but most prominently the economic sector (Deng & et. al., 2020). Numerous industries, their financial markets, and supply chains were affected, and as a consequence, this pandemic period disrupted the lives of many people. As the research report is related to the construction activities in the oil and gas sector, so, the prime focus will be on the same. During this period the construction company has been hit hard by the pandemic. The company faced obstacles such as lack of availability of resources, safety measures, contractual obligations, project delays, and cancellation of the contracts. When WHO (World Health Organisation) on March 11, 2020, declared the outbreak as a pandemic, from a logical perspective most of the companies referred to the situation as “Force Majeure”. The term “Force Majeure” is a term that is denoted as a situation where the contractual clause is looked at as an extraordinary event and considered to be an action that is beyond the control of the party involved (Dewi & Adiarsi, 2020). Thus, the party involved in an agreement has to wait for the things to get settled down, and this likely gave rise to the project delay situation. However, there were other consequences as well which owners of the project faced, for example, re-evaluation of the contractual provision so that project termination can be eliminated, this took a lot of time and energy because any wrong step can lead the company towards failures. Therefore, the management system has to look out for ways by which they can have limited losses.

Most of the countries and their government believed that oil and gas activities are one of the important aspects to be considered because it regulates the economy of the nation (Di Vaio & et. al., 2020). But during this pandemic continuing the operations became very difficult and there were many underlining reasons for the same like shortage of employees because some of the employees were infected by the virus, and others were not willing to join the workplace because of the fear of getting Covid positive. Other than this, maintaining social distance in the construction field was practically not possible as some of the units were very close to one another. Therefore, companies were forced to work or operate their task with the help of skeleton crews or with a limited number of employees. However, working with skeleton crews pushed the action to some extent but there were disruptions such as proper maintenance, inspection, repair, and replacement of equipment required for drilling (Diao & et. al., 2020). The issue didn't stop here, as complications regarding the supply chain were very prominent. Lack of coordination between both the second-tier and third-tier affects the service of the companies and most of their operations. The instability and uncertainty increased a lot of chaos amongst the companies and with their associated institutions. However, initially controlling the consequences of Covid-19 was something beyond expectations, but here government played an active role in minimizing the impact of Covid-19 on companies to some extent. They provided loans at a lower interest, extended the duration of repaying loans, and so on.

This research report will insight into the road maps of why construction companies in the oil and gas sector faced difficulties in completing their projects. The research report will begin with a statement which is “*Factors Affecting Construction Project Completion on Time in Oil and gas sector in Kerteh, Terengganu During COVID-19 Pandemic*”. Based on the stated objectives and research questions that need to be answered are framed. Moving forward in the introductory part a piece of brief information about the disease i.e., COVID-19 is provided. This will help the reader in having an overview of what all factors or element the researcher is going to discuss. Forth a background about the oil and gas sector both in perspective of the world as

well as Malaysia will be included. Research is conducted so that the raised questions can be answered and for this. It is important that the researcher goes through various books, journals, articles, internet sources, etc., so, here comes the next part, the literature review. Therefore, the collected information from all these resources will help in framing the literature review and will demonstrate content that the researcher is looking forward to (Do, Nguyen & Dang, 2021). The research cannot be done overnight hence, it requires a lot of effort, for example, collecting information, using and applying appropriate methods, and so on. Thus, the section of the procedure will include the research methods that will be used for making the research project more appropriate and authentic in nature. It will help in determining the validity and reliability of the research projects. Moving further in the research project, the data analysis part will include some quantified information which will further assist the researcher in graphically presenting the data. Lastly, the research report will have a section related to the conclusion and recommendation. In this section, a summary of what all information has been achieved after conducting the research will be included. Moreover, the recommendation part will include some points that the company can consider if any (COVID-19 pandemic) arises in the future (Rassanjani & et. al., 2021).

1.1 Background

The oil and gas sector is considered to be the biggest sector with respect to dollar value with around hundred and thousands of workers from worldwide work in this sector. Globally, the oil and gas sector generates billions of dollars each year. In some of the countries, these oil and gas sectors are so prominent that they have a significant contribution to the national GDP of a respective country (*Introduction to Oil and Gas Industry, 2019*). Additionally, if we look more significantly at the different sectors present in oil and gas then it can be classified into three key areas and these are upstream: in which natural gases are searched underwater and

underground fields. Midstream: This area entails transportation, storage, and processing of oil and gas. Downstream: under this, all the oil and gases that are extracted are put in the process of refining and purifying. Primarily, the product that oil and gas industry manufacture at largest number are fuel oil and gasoline (petrol). Over the period of time, the oil and gas sector has seen a lot of ups and downs in relation to the demand of the market. However, since 2016, the price of oil has recovered from \$40 to \$67 in 2018 (*Oil and Gas Industry Overview, 2019*). There are many factors that helped the oil sector in their recovery process, for example, a restraint agreement signed between OPEC (Organisation of the Petroleum Exporting Countries) and non-OPEC countries. This agreement helped companies in fulfilling the global demand of the oil and gas markets. Therefore, the oil and gas sector has a great influence on the economy of a nation thus, investing in this sector can boost the economy of the country (Dumitraşcu-Băldău, Dumitraşcu & Dobrotă, 2021).

Considering the country Malaysia, the oil and gas sector has a hugely significant role in the growth of the “Malaysian Economy”. As we have already discussed above the three main sectors of the oil and natural gas, namely upstream, midstream, and downstream. All these three sectors have great involvement in various actions as they are used for both offshore and onshore activities. However, here the role of the construction industry is considered as a part of extracting more and more benefits from the sectors. For example, looking at the activities of upstream: which primarily focuses on exploration and production, needs a facility for production and stabilization. The company requires a fixed platform, reservoirs, and other production containers for storing the extracted oil and gases (Dye & et. al., 2021). Thus, all these oil and gas companies require a properly constructed building, so that, oil and natural gases can be stored in an effective manner. Moreover, oil and gas companies cannot deny the importance of the other two sectors which are midstream and downstream because both the sectors include further construction works i.e., construction of pipelines for better transportation, terminal, and refineries, etc., Therefore, the phase of construction is one of the

crucial parts for executing the weightage and delivery activities of oil and gas companies and it must be done without any further delays or issues. It is said that if a company that is dealing in the oil and gas sector wants to gain success then there is a requirement of proper planning and preparation of various activities which are included throughout the executing process. The basic factors that need to be a lookout in the construction phase are the start-up, commissioning, input and output of the projects, quality standards, and finally the final handovers (Esa, Ibrahim & Kamal, 2020).

Construction projects are defined as “megaprojects”, that include large costs, increased risk, high visibility, integration of high labor force, extreme complexity, and a combination of various notable challenges. Thus, in simple terms, if we talk about construction projects then it is related to something which is more prone to risk. The reason behind this is the complex nature and the level of participation in the phase of construction. Over the past few decades, construction activities have become challenging for both contractors and clients and it is majorly due to tough budget and proper management. Every company lookout for opportunities from where they can cut down some of the amounts without compromising the quality in order to fit into the budget. Therefore, they develop strategic corporative objectives and apply the same according to the situation so that maximum benefits can be gained (Farashah, Sazvar & Hosseini, 2021). Meanwhile, construction activities in the oil and gas industry have a different challenge and it is related to the success of delivery because it includes a huge budget let us say worth more than \$7 billion, with a labor force of around 7,000 people. Henceforth, managing such a huge force requires a team that is highly experienced. These experienced personal will help the company in implementing and executing front-end planning with effective results under a scheduled time frame (Nicol & et. al., 2020).

1.2 Problem Statement

The oil and gas market of Malaysia has experienced extraordinary changes and events in terms of demand and supply in the initial phase of 2020 due to Covid-19 pandemic, which have earlier not experienced in the industry. The Covid-19 virus spread has forced the government of Malaysia to issue orders such as lockdown in the country, impose restrictions on traveling activities, and stay at home orders (Global Monitor, 2020). Restrictions on the movement from one place to another have majorly decreased the use of automobiles, shipping, transportation, and industry activity.

According to the president of Petronas Tengku Muhammad Taufik Tengku Aziz, the outlook of the oil and gas industry will stay challenging due to the increasing number of cases of Covid-19 pandemic and fundamental indecisions over OPEC+ product of crude oil cuts in the year 2021 (The Edge Market, 2020). Tengku Muhammad Taufik added that there are several factors that have impacted the construction project completion of the oil and gas sector in Kerteh, Terengganu.

Successful construction projects normally measured by the ability to complete before due date within budget allocation (Aliyeh, Ali & Mohammad, 2018). Therefore, factors affecting timely project completion are of critical importance to the profitability of most oil and gas construction projects. Many researchers have identified these problems as factors that affect the delay in construction projects and will affect company's performance and overall economy of the country as well. The delay in construction projects by many factors is usually linked to the performance of time, cost, and quality (S Umeesh, Syuhaida & Subaashnii, 2018).

For example, Sambasivan and Soon (2007) reported that 17.3% of the construction projects in Malaysia encountered delays for over three months. Undeniably, identification and evaluation of factors causing delay in construction projects have been carried out globally before, in order to provide support and help for the affected parties. However, knowing that this situation is literally new and still ongoing all over the world, there is a need to look at this issue

from local perspectives hoping to gain more insight on this matter. Renowned as one of the heart of Malaysia oil and gas industry, Kerteh seems appropriate to be the focus of this study.

Hence, this research is designed to evaluate the factors affecting construction project completion on time in oil and gas sector particularly in Kerteh, Terengganu during Covid-19 pandemic and to propose actions that can be implemented to prevent and resolve project delay related issue (Mor & et. al., 2021).

1.3 Research Objectives

1. To evaluate factors affecting construction project completion on time in oil and gas sector in Kerteh, Terengganu during Covid-19 pandemic.
2. To propose actions that can be implemented to prevent and resolve construction project delay related issue during Covid-19 pandemic.

1.4 Research Questions

1. What are the challenges encountered in completing construction project on time during Covid-19 pandemic?
2. What are the factors impacting the project completion in the Oil and Gas sector of Kerteh, Terengganu?
3. What is the most significant factor in contributing to the delay of the construction project during Covid-19 pandemic?
4. How do you manage delays in a construction project during Covid-19 pandemic?

1.5 Significance of the study

The key significance of this paper is resulting in supporting the researcher and reader in gaining knowledge related to factors affecting the construction project accomplishment during Covid-19 pandemic. This helps the concerned of companies involved in the oil and gas sector to gain knowledge regarding the factors impacting the construction project completion of the industry.

The evaluation of such related factors during Covid-19 pandemic can assist clients, contractors, consultants and project management team of this oil and gas construction projects in:

- Preparing more realistic and accurate project cost and schedule.
- Completing project on time and avoiding schedule delay.
- Taking the necessary steps and actions in advance to avoid such delay.
- Giving more attention to the most crucial factors.

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CHAPTER 2

BACKGROUND AND LITERATURE REVIEW

2.1 Introduction

Covid-19 Pandemic is one of the major and challenging situations for the whole world and people residing because this is a life-changing situation for them. There are many factors and components which get affected because of it such as construction work, oil mills, transportation, the education sector, etc. due to which the economy of the country gets affected adversely. Kerteh, Terengganu is the region in Malaysia that is a developing country, so people do not have sufficient funds and circumstances for fulfilling their demands. Numerous workers are working at construction sites and oil mills but because of this pandemic, they cannot get proper remuneration, so it is tough to manage and maintain operations properly (Galbusera, Cardarilli & Giannopoulos, 2021). The Covid-19 is not a temporary problem that gets over in a specified time period, so the government cannot start and work over the actions and operations properly. With the help of expert views and opinion, if people started gathering in large number, there is an increment in the number of patients. There are many factors and components that need to be considered by the construction manager and oil mills to come back and conduct their operations properly. The role of government in a pandemic is active and they are not taking any action of leniency, hence the construction sites have to consider all the factors in mind.

The main reason for the delay in construction projects is not the availability of labors and materials as per government norms. In order to stop Covid-19, the government announced a lockdown for certain months, so this situation arises the situation of pause to all the work and people cannot work for earning their livelihood. Due to government protocols, the material and equipment cannot be transferred from one place to another due to work, the performance of construction managers cannot conduct and plan their operations properly. Apart from this, there is an increment in the cost of material, equipment, and transportation after the lockdown

because of a reduction in the number of workers. In the situation of lockdown, the workers return to their native place and are not interested to work because of dangerous situations and not the availability of proper resources (GAYATHRI, PRIYA & KAVITHA, 2021). There is a situation in which an individual is working in the oil industry, then labor is not available after lockdown, due to which working efficiency of the oil industry and construction sites gets affected. There is a requirement of material and equipment for construction sites and oil mills but due to irregularity in supporting services, final services also get affected adversely.



Figure 1: Construction core net profit and change

Source: [(The Star, 2020)]

As per collected information, it is observed that the profits of the construction industry get reduced because of improper and irregular factors. There is a requirement of oil in daily life to people for cooking and as crude oil in industries, hence it is essential for construction site

managers to understand the best and appropriate way to conduct and organize activities properly. There are many changes in the external environment such as political policies, technological halts, etc. due to which construction sites and oiling business gets affected (Halimatussadiyah & et. al., 2020). There is complete and specific information about clients and their requirements regarding oil, so managers try to fulfill it but after Covid-19 it is tough to complete it due to adverse external factors. The fluency of operations with workers is not maintained after Covid-19, so the performance of oil agencies gets affected. There is a reduction in demand for oil from society because of less requirement and consumption of oil. There is an issue in communicating with clients and consumers because they are not aware of the final price and further requirements. There is fear in the mind of clients; hence they want to pause the construction work. In the oiling sector, the performance is affected because the requirement and demand for oil get reduced and people do not have sufficient funds for further activities, hence they want to control and reduce supporting daily life activities. There are numerous organizations working in the oiling sector, there is an increment in competition and after this pandemic, they are trying to keep their organizations in existence.

According to Hamid & et. al., (2021), there is a difference and decrement in sales and revenue of the oiling industry and construction business because people do not have occupations up to that frequency. Apart from this, the construction work requires huge time and cost for conducting activities properly. The main problem related to the construction business is a lack of planning because of differences in views and opinions of people. The contractor and sub-contractor cannot communicate properly after the pandemic and this situation delays the project and affects the frequency of working. There is a lack of schedule for working after pandemic in the construction and oiling business. There is a change in operations of the oiling projects as per the client but after a pandemic, it is tough for managers to understand the demand and conduct operations properly. The pandemic is a challenging time for consumers,

managers, and organizations as well. Hence it is important for external and internal parties of organizations to work as per market trends. There is a change in government policies related to the construction and oiling sector because of a pandemic such as social distancing, curfew, restriction related to a number of workers. In oiling industries, there is a requirement of members in large number; hence agencies need to maintain working style as per government protocols. If a number of workers are not available, then there will be an impact on the performance of oiling projects. The manufacturing of oil is not easy, there is a lot of processing of it, but after a pandemic due to lack of workers, it is not easy for workers to conduct and organize activities properly (Li & et. al., 2019).

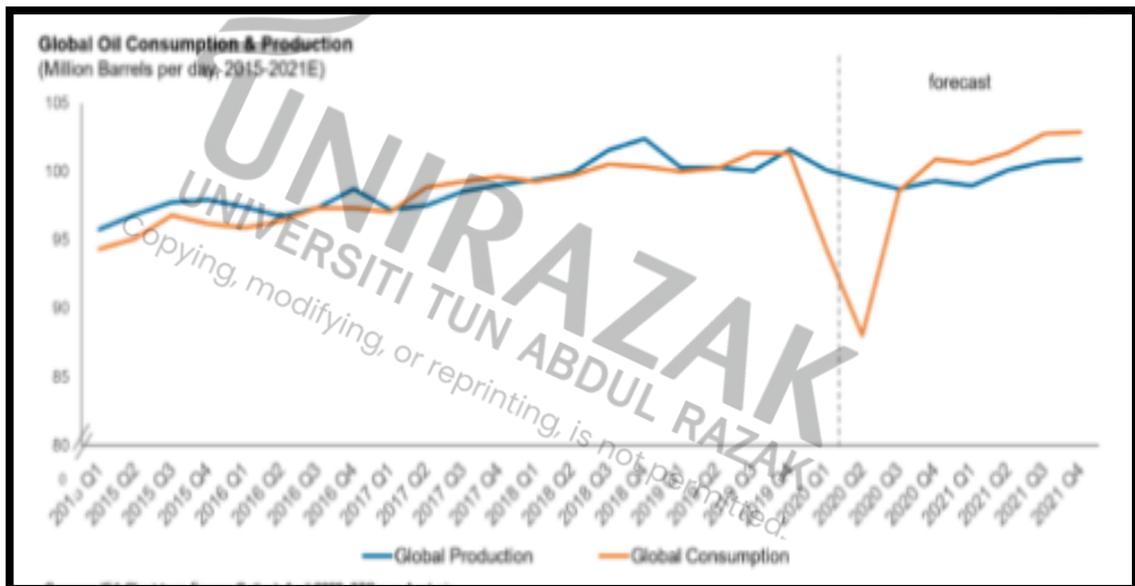


Figure 2: Future for oil and gas industry

Source [(27 Groups, 2020)]

As per the view of environment, there are many changes taking place in the environment such as excess summer, winter due to which, there is fear in the mind of people and they do not want to come back and join their work. The symptoms of Covid-19 are very common so people have the fear in the mind. As per an article by Kang & et. al., (2021), it is analyzed that construction firms lay off 40% of the workers which affects the performance of the work and

results in a delay of the construction work. The main and crucial factor which affects the performance of the oiling and construction business is that they cannot re-schedule the operations after Covid-19, hence operations and activities are not well managed as per market requirement. In the pandemic, the main issue faced by the lower and upper-middle-class consumer is lack of funds, hence they cannot invest any funds in construction work, and hence the contractor stops this work. Apart from this, the change in working style affects the performance and fluency of work after the lockdown situation. There are numerous clients who do not want to contact and work on non-important tasks; this hampers the performance of the overall association. As per the change in demand of consumers, the oiling industries have to alter the working style and fulfill demand due to which the projects get delayed but clients do not have any issue because the situation comes under emergency and might cause human loss (Honorati, Yi & Choi, 2020).

In the words of Joshi & et. al., (2021), there is a requirement for complete and specific knowledge to conduct and organize activities properly because it helps the managers to make operations and activities for betterment in the society. There are many operations that get affected and have an influence on oil and construction activities such as accommodation for laborers, transportation, etc. which are supporting and aside activities but important for conducting and organizing activities properly. There is a requirement for complete and specific knowledge, so experts can guide and manage operations in adverse situations. There is a threat in the mind of people, hence they stop working and going out which affects the operations negatively. There is a requirement for complete and specific information that will lead to manage and operate properly. The change in activities and operations will lead to getting activities in different directions. The working style will get influenced because of trade barriers. Apart from this, the people living in Kerteh, Terengganu get affected by operations and their negative impact; hence they cannot concentrate on operations properly. The government of

Kerteh, Terengganu have some trade barriers and protocols that need to be followed by the construction and oiling industry (Karim & et. al., 2020).

There is a requirement for oil for construction work as well; hence the activities get adversely influenced due to lockdown. As per government norms, it is tough for managers to convince workers for conducting and organizing their activities because they are not interested in communicating and conducting activities properly. The essential purpose for this freefall is the absence of fuel interest across the world followed by an overabundance in worldwide oil markets prompting an intense deficiency of accessible stockpiling limits. With the increment in members who are reluctant to chance to do actual operations and facing many problems due to lack of awareness among people. Rather than submitting to the future agreements at expiry, the possibility of steadily selling the front month's agreement at the open market and turning it over to the following month shows up more practical (Ramli & Shakir, 2021).

According to Syzdykov, Seitimov & Baibussinova, (2020) not at all like Brent forces that created close to the North Sea and got comfortable money at expiry, West Texas Intermediate is created in landlocked zones and must be conveyed genuinely, subsequently, making costs a weight for the last from a transportation outlook. This prompts more noteworthy vulnerabilities spinning around WTI costs than Brent rough as can be seen from the way that Brent unrefined costs declined less significantly on Monday where all the while exchanging at levels near US\$25/barrel. Apart from theoretical aspects, there are some practical implications that cannot be determined without analyzing market strategies and organizing activities properly. The change in business activities affects the mindset of the workers. They have a fear regarding the performance and operations of the organization. The situation of lockdown is very effective for controlling COVID-19 but it affects future operations because this affects and influences the workers and their mindset.

There is always a fear in the mind of getting infected, hence the efficiency and regularity of workers also at a halt. Apart from this, the actions and operating style of the organization get changed with which workers cannot coop up with it. The change in operating style creates worries in the mind of managers and organizational heads because they have to manage and direct workers regarding it, hence apart from improving operations they are thinking of coping-up with these stuffs, so construction and oiling operations get affected due to it. The workers are concerned about their pay scale because there are financial crises in the country, so they might face it at their level. There are many workers who are working from their home but not getting regular remuneration, this makes them not to work and do some productive work. So the number of laborers is getting lower in comparison to the required ones (Jeevan & et. al., 2020).

The situation of COVID-19 and lockdown arise suddenly in Kerteh, Terengganu due to which many projects and sites are at a halt. This creates a situation of confusion for project managers and contractors to final which one initially. There are some clients who are not ready to deposit funds due to which their work is delayed and the operating style of managers is not proper. There are issues and problems in many sectors due to which construction and oiling operations also get affected. It is essential for the managing committee of associations to understand and organize operations properly, so after COVID-19, it is clear and understood to workers as well. Business land requests likewise got hammered as work from home/distant work turned into the new ordinary that brought about underutilization of office spaces. Requirement of shopping centers, malls, film halls, and restaurants likewise slaughtered the hunger for business infra space. The celebration season starting from October ordinarily gives a lift to private but neglected to inspire the state of mind for reasonable sections of the populace from purchasing/contributing private property (Nhamo, Chikodzi & Dube, 2020).

The construction business is one of the most employments generating businesses, but after COVID-19, there is a decrement in the demand for workers, so the GDP of the country

also goes down. Even though the Union Government took the choice of perceiving the pandemic as an emergency, the requirement was on the development business to manage the one-two punch of COVID notwithstanding the all-around existing slow conditions. There is a requirement for numerous workers 24*7 but as per government norms and protocols, construction businesses can work only till evening. The oil industry faces problems in transporting and there is a decrement in the oil demand. The cost and process of material get higher due to which people are switching to other options related to it. There are many construction projects pending at Kerteh, Terengganu but due to financial crises, people are not working over it properly and want to wait to determine future circumstances (Pitchaimuthu, Thakkar & Gopal, 2019).

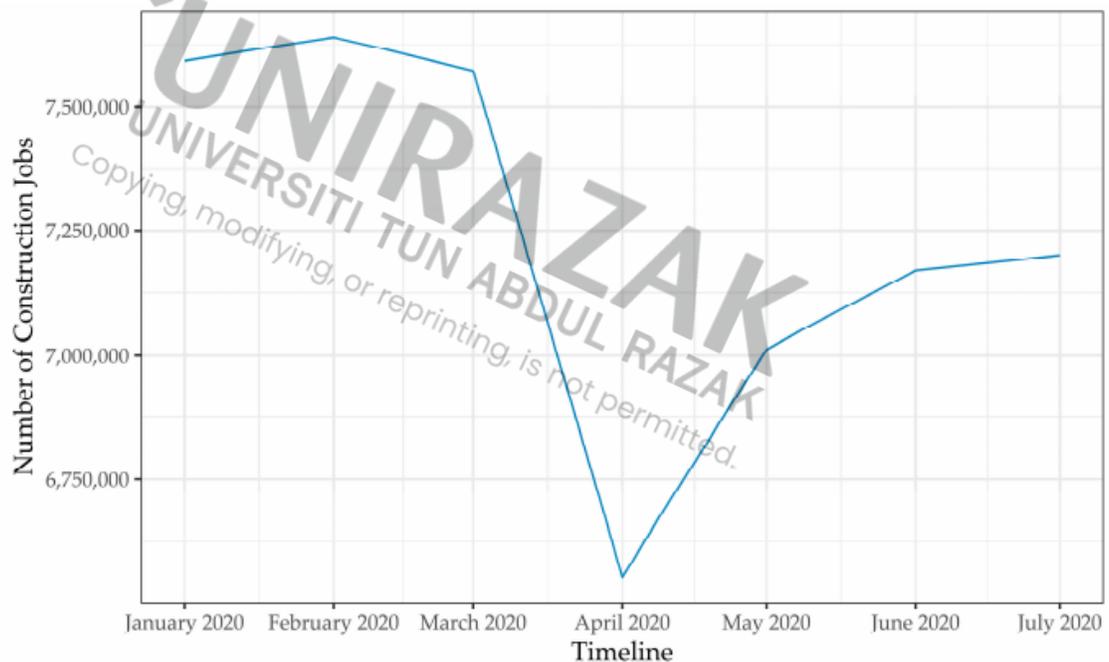


Figure 3: Number of Construction Jobs

According to Khoo & Hock, (2020), the situation of a pandemic is uncontrollable and imbalanced in the starting stage of the lockdown, but after some time, when the situation becomes adverse the managers and contractors understood that time is tough, so it is important to deal with it. There is a lack of expert knowledge in this pandemic. For instance: during

working, if a machine is at a halt, then workers cannot continue their working because of the non-availability of an expert. It is important and significant for laborers also to understand the situation and then conduct further activities. The change in operations will lead to manage and create cooperation among one another. There is a delay in the planning of people, so the construction industry is also at stake. For instance: If an individual is thinking to operate a business, then they want space and other things. With the help of the construction industry, they can fulfill most of the demand, but with the passage of time in this pandemic, the managers cannot organize and determine betterment in the activities due to lack of funds. In this pandemic, the people residing at Kerteh, Terengganu think to fulfill basic and important needs, when the situation gets sorted, the construction work can continue, hence this is one of the major factors which leads to delay in construction and oil projects (Li & et. al., 2020).

Profitability rates supposedly endured across the development business. A significant part of the misfortune in profitability and productivity was ascribed to the new wellbeing estimates that were important to ensure the labor force as the pandemic kept on advancing. Truth be told, one of the venture supervisors demonstrated that working securely was the first concern, and profitability assumed a lower priority in the pandemic circumstance. A decrease in profitability rates additionally was credited to deficiencies in the accessibility of PPE and the decrease in the number of laborers to consent to the social removing suggestions. By and large, the members additionally referenced that laborers decide to not answer to work for an assortment of reasons, which additionally affected profitability and proficiency. A portion of the reasons referenced included isolating necessities, really focusing on kids because of school conclusion, and the dread of being tainted at work and being transporters of the infection when around family. Enlistment and preparing of substitution laborers likewise devoured considerable measures of time (Liat, Nikhashemi & Dent, 2020).

According to McLean, Charles & Rajkumar, (2021), the situation of a pandemic is uncontrollable and imbalanced in the starting stage of the lockdown, but after some time, when

the situation becomes adverse the managers and contractors understood that time is tough, so it is important to deal with it. There is a lack of expert knowledge in this pandemic. For instance: during working, if a machine is at a halt, then workers cannot continue their working because of the non-availability of an expert. It is important and significant for laborers also to understand the situation and then conduct further activities. The change in operations will lead to manage and create cooperation among one another. There is a delay in the planning of people, so the construction industry is also at stake. For instance: If an individual is thinking to operate a business, then they want space and other things. With the help of the construction industry, they can fulfill most of the demand, but with the passage of time in this pandemic, the managers cannot organize and determine betterment in the activities due to lack of funds. In this pandemic, the people residing at Kerteh, Terengganu thinks to fulfill basic and important needs, when the situation gets sorted, the construction work can continue, hence this is one of the major factors which leads to delay in construction and oil projects (Lestari & Rofianto, 2020).

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2.2 Theoretical Foundation

2.2.1 Impact of Covid-19 on Oil and Gas Industry of Malaysia

There is an adverse impact of COVID-19 on the overall performance of the association. It is essential for companies to understand the market demand and then taking proper actions related to it. For instance: as there is less or no requirement for petrol, so production of petrol must get decreased and other activities and operations need to be organized for the use of gas. The production and storage facilities also need to be changed; hence this will make operations proper and understandable for betterment. There are some crucial and important organizations dealing and providing the best oil and gas facilities, so they must change their working style and communicate to them properly. The situation and circumstances are not in the control of managers of oil agencies, so proper communication and activities need to be determined for it (Idris, 2020).

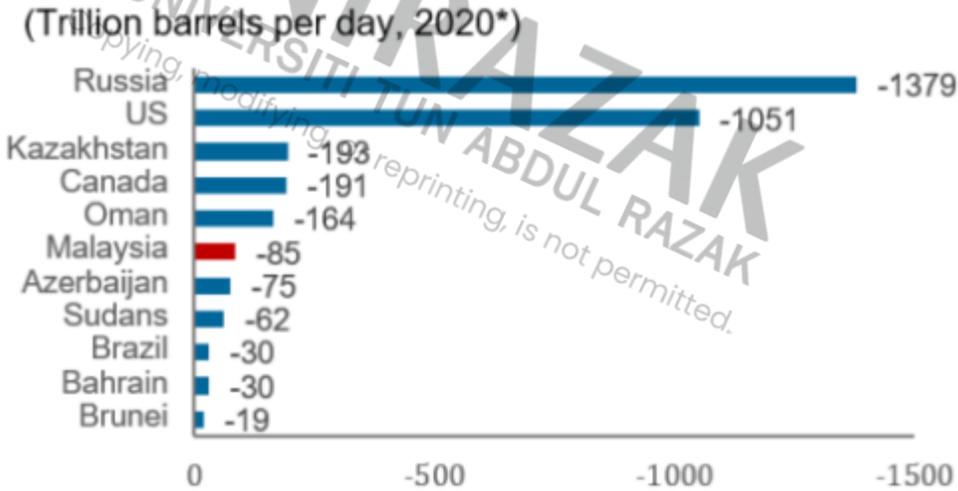


Figure 4: Revision of annual liquids production change

According to Mannan, Chowdhury & Farhana, (2020), the performance of the oil industry in Malaysia is not good and it affects the other sectors as well. The operations and activities of the oil industry are related and connected to other countries as well. Hence operations and activities are well developed and organized properly. The change in business

activities results in managing and determining operations properly, hence managers and cooperative houses are working to alter the activities effectively.

2.2.2 Factors affecting completion of a construction project of oil and gas sector in Kerteh, Terengganu during Covid-19 pandemic

There are numerous and many components that affect the working style of the construction and oil industry such as technological assistance, availability of workers, etc. hence it is essential to identify and understand the requirement of the market and plan activities accordingly. Before COVID-19, the managers and contractor plan activities for the long term and review them, but in this era, the activities and operations are planned for a short span of time so operations and activities are well managed according to government protocols. As there is a financial crisis with some people, so they cannot conduct and manage operations properly. There are some specific points that determine the change in operations because of Covid-19 such as government factors, financial planning, etc. are discussed as under-

2.2.2.1 Political Factors

Political factor includes the role and active participation of government and other local parties. The situation of a pandemic is not affecting a particular geographical region, but it has operations and impacts on different parts of the country. Hence the Malaysian government makes proper protocols to provide a clear understanding of norms to be followed in the construction of oil and gas operations (Loizia & et. al., 2021). The working style gets changed because it is risky to allow many workers to work in the same place. The activities need to be communicated to the government and permission is required. There is a requirement of many resources which can collect and reimburse from other countries, so permission is a requirement. The contractor needs to communicate and deliver complete information about working hours

and workers working. In the pandemic, there are many individuals who get back to their native place, so there is a lack of workers. The contractor needs to communicate the transportation facility provided to workers. The government restricted individuals to conduct work the whole day and night because of night curfew, weekend lockdown, etc. This results in a reduction of the working efficiency of a construction project in the oil and gas sectors.

2.2.2.2 Economic Factors

The economic factor implies financial growth and planning of the construction activities in the oil and gas industry. The construction operations require more funds for operating and conducting construction work in a smooth and proper manner (Mayilvaganan, 2020). There is a change in activities because of Covid-19. The managers of oil and gas construction do not have sufficient funds for regular payment at a construction site, so it is essential and important to conduct and organize activities properly. The funds cannot acquire from the bank and financial institutions as loans, hence activities are not managed and determined properly. The change in business activities makes proper understanding and knowledge about business activities. The managers of oil and gas organizations are planning to operate with some financial assistance in the future, but in this pandemic, they get worst, and business operations cannot manage and conduct effectively. The contractor also wants regular income for conducting construction work but due to this pandemic, the financial support becomes weak and activities cannot be conducted properly (World Bank, 2020).



Figure 5: Government's Economic Stimulus Packages

Source [(Jupiter, 2020)]

In February 2020, Dr. Mahathir Mohamad the former Prime Minister introduced a package called Economic Stimulus with the value of RM20b. In the month of March, Muhyiddin Yassin the Prime Minister introduced another package in the amount of RM230b (Jupiter, 2020). The stimulus package is called to be the Pakej Rangsangan Ekonomi Prihatin Rakyat (PRIHATIN), comprised of around RM128 billion for welfare, RM100 billion for the SME, and RM2 billion for reinforcing the economy of the nation. Before the implementation of the Recovery Movement Control Order, the country's government presented another stimulus package known as PENJANA with a value of RM35b (Jupiter, 2020).

2.2.2.3 Technological Factors

The operations and activities of construction can be conducted and performed with the help of technology and machinery. There are numerous changes in the technology through which managers and contractors can conduct and manage activities properly. There is a requirement for alteration and up-gradations in activities. Hence in lockdown, technological assistance cannot help in conducting and organizing activities properly (Ranasinghe,

Karunarathna & Pradeepamali, 2020). The managerial policies of the construction business are changing frequently but, in this era, it is tough to accept and implement changes. Apart from this, with the use of new and latest technology, there is a requirement of expert knowledge which is not available properly, hence performance and construction work at oil and gas industry is at a halt.

2.2.2.4 Human Power

Human power refers to the availability of workers who are working and operating with the help of managers and others. There is a requirement for change in business activities and operations, through which they can organize and manage activities properly. The operations and activities are managed for understanding and determining operations properly. It is essential for the contractor to determine and manage operations properly because, after COVID-19, there is a reduction in involvement and concentration of workers. The workers have shifted to their place considering the uncertainty of the market. Apart from this, the managers are well organized and managed properly, hence actions and activities are properly organized (Masoudi & et. al., 2020). The situation of small level workers is very weak because they cannot conduct business activities in an appropriate and effective manner. The business activities are not operated properly because there is no planning regarding future actions and activities. The business activities and operations are well understood by managers because it helps the contractor to plan and manage further activities according to COVID-19 guidelines.

2.2.2.5 Environmental Factors

The role of the environment in the era of COVID-19 is very impactful because the symptoms of COVID-19 are very impactful; hence activities and operations are well planned and organized properly. The manager's planning and activities are well determined according to managers; hence workers cannot take risk of working in this era. The climatic change is also dangerous in this era if, an individual feel feverish it must cause fear in the mind of other works

at the construction site. There are many changes taking place in the environment such as seasonal changes, sudden changes in climate, etc. hence it is essential and relevant for managers to understand and organize activities properly (Tanjungco & et. al., 2021). The change in climate results in seasonal fever which is one of the major symptoms of COVID-19, hence workers need to manage and perform activities properly. If an individual is facing an allergic problem, then it might cause tension at the construction site and it might hamper the performance of others which results in a delay of activities and conducting business operations properly.

2.2.3 Equipment and Materials

The equipment and material are essential components for conducting and managing the construction business. There is a requirement for many resources in the oil and gas construction business; hence it is essential for contractors to understand the requirement of material. Because of COVID-19 restrictions, there is a pause on transportation services, so material cannot be collected and delivered from one place to another. The managers and workers are well aware of the management of operations through which they can direct activities properly. When material and equipment are not available, then it is tough for managers to conduct and organize construction operations. There are many changes in the materials, hence it is the responsibility of contractors to plan and manage activities properly according to the external market. Apart from this, the expert personnel cannot judge and determine the quality because they have fewer resources and parties in the market. It is specific and relevant for individuals to understand and organize operations properly (Naji, Gunduz & Salat, 2020).

2.2.4 Demand and Supply

Despite the fact that the development area was in a droop between 2011 till 2015 with interest for development gear saw a total breakdown, the area figured out how to develop post-2015 and the signs were acceptable until the lockdown forced the nation over because of the

COVID-19 infection flare-up. It is being accepted that the Covid episode's effect on the framework and development section is required to be more terrible than that of the 2008 monetary emergency that drove financial stoppage. The inconvenience of Section 144 by state governments and suspension of public vehicles till April 14 has effectively affected labor versatility and this may significantly further if the current lockdown demonstrates incapable (Wong & et. al., 2020).

The lockdown has brought about different foundation project locales gazing at a conclusion as it is fundamentally because of an impact on the work development because of the lockdown and because of store network disturbances that may contract further as more states authorize COVID-19 lockdown. The financial circumstance in the development area for both the Center and states is as of now deteriorating and kept subsidizing of foundation capital use will be a test soon. Furthermore, every one of these issues will be additionally bothered by the help bundles that are being carried out by numerous states to help the deficiency of pay brought about by the lockdowns. This may additionally pressure the public authority's capacity to spend on the foundation throughout the following couple of years, further the development and the framework portion (Mohd & Rahim, 2021).

2.2.5 Increasing Health Issues

There is an increment in the health issues of the people because they have to conduct and organize activities for betterment. There are many changes in the health of workers when they are travelling from one place to another. Hence if there is a diverse impact on their health, then it causes many problems to the operations and working style of oil and gas construction work. It is relevant and significant for people to manage and control business activities properly because it makes easiness in the operations and conducts futuristic activities accordingly.

All in all, the abrupt spread of the COVID-19 pandemic has changed the equilibrium in the oil and gas industry, and the execution of new advancements has changed the market into a

time of cutting-edge energy industry. To react to the emergency, organizations ought to keep in touch with their providers, merchants, and other partner biological systems to guarantee transient business progression. The organization must reconfigure its working model and change its expense structure during the lock-in stage. Organizations can utilize new advances, including computerized work techniques, to relieve human-related dangers just as investigating association and M&A freedoms to create portfolio procedures for what's to come. The worldwide oil and gas market is required to recuperate in the last quarter of 2020 with the delivery of the development control request (NGUYEN, HUYNH & NGUYEN, 2021).

2.3 Proposed Conceptual Framework

2.3.1 Causes of project delay

According to the viewpoint of Ogunnusi & et. al., (2020), over the period of time, the major concerns of many big construction companies are minimizing the duration of the schedule delays and the situation when companies overrun with cash. Moreover, if we look at the definition of the delay then it is stated when a company fails to complete its project within the time frame agreed upon in the contract. However, the reason for the delay in the construction project can be based on two different matters yet they have some relation with each other. First, the delay in time means not been able to complete the project under the given time frame, and the project has been extended beyond the original plan. This can be because of the uncertain circumstances that were not anticipated and, in this case, COVID-19 is the one. The change in the schedule puts an impact on specific activities and consequently delays the completion of the project. However, the success of the construction project can be determined or acknowledge when all the actions are completed on time as per the client's specification and the budget. Moreover, there are other parameters as well which demonstrate the success of the project like quality standards, time, and cost limitations. In a construction company, the cause of

delay with respect to explanatory and descriptive in nature may lead to managerial issues. However, this can be solved with the help of alternative approaches like developing an alternative tool that can assist in solving problems related to construction and delay in the procedure. Thus, this is the reason why construction companies have to suffer the most with their deadlines and budgets. However, other than time restrictions there are various perspectives that put an impact on the attributes of the projects (Harrison & et. al., 2020).

Understanding the impact of COVID-19 has really become an important factor because it has affected capital projects and their related construction programs. The actions of owners, contractors, subordinates, suppliers faced a lot of difficulties in fulfilling the demands. As the year passing by, the impact of COVID-19 is continuously expanding, and as a result, businesses are struggling in many ways. Firstly, the companies are facing difficulty in adjusting to new life especially the projects related to construction because due to multi-faceted components, the capital expenditure programs are struggling. Moreover, the continuous involvement of government entities in response to COVID-19 has changed the working hours. As a result, companies were forced to work with skeleton crews, or instead, they are enforced to shut down their work for a certain period of time. Although, all these actions were in response to COVID-19 but consequently given rise to elements such as delays, cost impacts, loss of efficiencies, etc., However, the action taken by the regulatory bodies was a necessary step at this point where the cases were rising and there was a need of halt at the workplace because of the health and safety concern (Panneer & et. al., 2021).

There are many ways by which a company can manage the delays in a construction project during the COVID-19 pandemic. In order to understand ways more appropriately, we can classify the segments into three categories and these are project design, bid, and construction phase. Therefore, below all the segments are explained briefly:

Project Design:

- Material Specification: There are many things that go simultaneously in a construction company. Some of them can be important and should be done on a prior basis whereas, some of them can keep at a halt. Thus, the company should specify some of the materials that are needed erstwhile. As a result, it will help the company and the management in managing the levels of cost and schedule under which the project has to be completed. Moreover, the company can use products that are locally manufactured and can keep sufficient stock for fulfilling future needs and demands (Rashdi, Ramaswamy & Karim, 2020).
- Delivery Methods: During this pandemic, transportation was a major issue, and the reason being, strict rules and regulations by the regulatory bodies in order to control the positive cases of COVID-19. This pandemic made companies develop an understanding that it is important that they make a shift from the traditional design-bid-build delivery method to constructive management at risk (CMAR) delivery model. For example, the construction document must allow the company in designing its team and cost manager so that if required it can mitigate the challenges.
- Proactive risk management: In this companies can have a proper analysis of the various activities and further, they can undertake quantitative risk measures without compromising their cost and schedule exposure (Tung & et. al., 2020).

Project bid phase:

- Assess: while working in a construction company assess to resources is very important for formulating the process in a regular manner. Suppliers can engage with project managers in order to get a competitive bid which is possible. This will help the company in cracking the most effective deal.
- Extend: Company should make their agreements in such a manner that they can have access or power for extending their procurement time. Thus, through this company will be able to schedule its end date constraints (Shooshtarian & et. al., 2021).

- Reconfigure: the agreement should not be rigid moreover, there should a request for proposals of different activities like extend, acceleration tactics, request for second or third shift, and other activities. As a result, during this pandemic where the cases are increasing day by day, the company can keep their construction sites less dense. Therefore, workers will be able to comply with guidelines related to “social distance” in a more appropriate manner.

Project Construction phase:

- Swing Shifts: a person cannot work for a long period of time, needs time for rest in order to give more productive results. The shift in the working hours will assist the company in creating a cost-saving result.
- Project Labour Agreements (PLAs): Whether the project is public or private PLAs are one of the essential components. It provides a guideline to the local unions so, if they face any kind of issues or problems they can negotiate with the company’s supreme members for better outcomes (Siddique, 2020).
- Contract Review: This is an important factor and during the period of the pandemic, reviewing contracts became more crucial. Owners of the company were firing their workers from their respective job by giving a single reason i.e., the company is facing huge losses and they cannot bear any more expenses. However, contract review is not only confined to the individuals who are associated with the company instead it will be helpful for contractors in understanding the termination/suspension rights and options.
- Certifications: this company should ask their payment certifier that the materials that are stored off-site are not certified under payment options. This will provide the company with leverage to limit its exposure with respect to suspension or termination (Tilaki & et. al., 2021).

2.4 Hypothesis Development

H₁: Movement Control Order by government during Covid-19 pandemic has a negative impact on the construction project completion in oil and gas sector of Kerteh, Terengganu

H₂: Movement Control Order by government during Covid-19 Covid-19 has a positive impact on the construction project completion in oil and gas sector of Kerteh, Terengganu.

H₃: Several factors impact the timely completion of oil and gas sector construction projects

H₄: Very limited factors impact the timely completion of oil and gas sector construction projects

2.5 Summary

Therefore, in order to eliminate the cause of delay, it is important that company keeps on going with their work with the help of the resources and alternative methods that are available to them as a result it will help them in minimising their additional cost. More often, while making an agreement, company should have a provision which can allow the company to have a request for extension of submission along with some additional claims as recovery.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is defined as research methods, designs, and approaches in order to highlight thoughts used in the study, justification of choice and describing advantages as well as disadvantages of each approach, and designing to take practical applicability to research work (Abbas & et. al., 2020). This is the framework that is connected with a specified set of paradigmatic assumptions which will be used for conducting research work to meet two criteria which are used for achieving objectives of research and methodology applied in researches of the same nature. This chapter helps in describing the type of research methodology tools and techniques used in research work. They are as follows:

3.2 Research Design

This is regarded as an overall strategy that has been utilized for carrying out research work which helps in defining logical as well as succinct plan in order to tackle established research questions with help of interpretation, discussion, analysis, and collection of data and information. The research design can be descriptive, semi-experimental, correlational, experiment, Meta analytics, and review. Here, the researcher has applied a descriptive research design where a depth study has been performed in order to obtain data and information. Moreover, this provides overall data and information related to the topic of construction in the oil and gas sector during the pandemic situation in the marketplace.

3.3 Study population and sampling procedure

The research population is regarded as a collection of people who are targeted by the researcher to identify an effective solution to arise research problem (Abidin, Ahmad & Ogundare, 2021). It has been performed for providing benefits to the population for providing both awareness as well as knowledge in context with the assigned topic. The size of the population is huge which is not possible to make a depth study from individuals as it leads to time-consuming as well as costly. Due to such reasons, the researcher has focused on adopting sampling techniques. The study is conducted with a population who are connected with the topic of research which is factors impacting project completion in the context of the gas as well as the oil sector at Kerteh, Terengganu. The target audience is managers as well as executives that are working for oil as well as gas companies such as WAZAM Ventures Sdn Bhd, Elektro Serve Sdn Bhd. The sample size taken for conducting research is 20 that includes managers, employees, customers of oil and gas Companies located at Kerteh, Terengganu.

On the other side, sampling is regarded as a technique to select a number of members from a population that represents statistical implications as well as features of the overall population (Adam & et. al., 2020). Here, the researcher has adopted diverse methods of sampling which does not focus on the overall population to collect data and information which is regarded as a cost-effective and time-saving approach and leads to generate a foundation of research design. Moreover, sampling methods are adopted for conducting study survey software to get positive derivation. The sampling technique is divided into two ways such as probability as well as non-probability. Here, the probability is an arrangement of choice for some criteria and accordingly selecting population on a random basis and nonprobability is selecting approach on basis of convenience. This does not provide equal opportunity for overall members.

In this research, the investigator has applied a non-probability sampling method for selecting a sample that is dependent on convenience. Under the non-probability method, research has

adopted purposive sampling which is regarded as judgemental sampling and leads to select units that should be studied effectively.

3.4 Data collection method

This is regarded as a process to collect data and information for a given topic in order to present outcomes of work (Adnan & Nordin, 2020). It is a significant part of the study because without it is not possible to make an analysis and provide the outcome. The data collection methods are of two types such as primary and secondary data. In the primary, data and information are collected for the first time with help of a survey, questionnaire, and others. On another side, when data and information are gathered from existing sources such as government report, journals, articles, newspaper and other is called secondary data collection method. Here, the researcher has applied a primary data collection method in which a questionnaire has been prepared and a response is taken from respondents about various questions related to the construction project of oil and gas during a covid-19 pandemic.

3.5 Operationalization and measurement

This is the way to measure the overall operations and activities of research work carried by an investigator for positive results. During a pandemic, it is important to make proper research work and measure them for the accomplishment of desired goals and objectives. The Operationalization and measurement are performed on the following ways:

3.5.1 Independent variables

This is defined as same the name applied to it. It is regarded as that variable that possesses capability in holding alone as well as does not change through influence by another type of variables which has been measured (Ajmal, Khan & Al-Yafei, 2019). In the given research work, the independent variable includes a limited number of people as well as workers who are going for work that provide an outcome in terms of lack of manpower that affect oil

and gas construction project work for meeting deadline. This is an independent variable that is not influenced by other factors. Here, it has lacked skilled and capable employees for completing construction project work of the oil and gas sector in the stipulated time period.

3.5.2 Mediating variables

This is regarded as variable that helps in explaining relationship among both dependent as well as independent variables. It is important to make proper study for both variable and provide outcomes. Here, mediating variable is covid-19 pandemic leads to set standard, rules and regulation by government of country and leads to follow by all people of Malaysia. In today's time, construction project is stopped due to covid-19 as it required number of employees for carrying out operations and activities. This cannot make people to work from work as physical present of man power is needed for completing construction project work and accomplish desired goals and objectives. One variable is dependent on other and that relationship is represented with help of mediating variables.

3.5.3 Dependent variables

It is defined as variable which mainly focus on factors which are evaluated. Such kind of variables is anticipated for altering as results are obtained for experimental operation of independent variables (Ali, Dominic & Ali, 2020). During research work, numbers of days that took place movement under control under is regarded as dependent variable. It is due to change in duration of movement control with help of government for longer time period and provide outcomes in delaying of both supply chain as well as logistic that hamper construction project to be completed in given time period. During pandemic, construction project has faced problem due to closure of market to purchase raw materials for carrying out activities and operations.

3.6 Data analysis

This is defined as procedure of applying in system manner for logical as well as statistical tool to evaluate and illustrate, recap & condense and evaluate data and information. In order to analyse data, various issues are faced by researcher to get accurate data and information about assigned topic. There are different ways through which data analysis is performed and results are obtained. The data analysis techniques are as follows:

3.6.1 Descriptive analysis techniques

It is defined as technique which is regarded as important stage to present statistical analysis (Al-Yami & Sanni-Anibire, 2019). This assist in providing main ideas connected with data distribution, detection of outliers as well as types along with allowing for connection among various variables that are used in research work. In order to conduct research work, researcher has applied descriptive analysis that mainly focus on describing as well as determining about collection of data and information with various methods to get proper data and information of assigned topic that is factors affecting construction project work for oil as well as gas sector of Terengganu during pandemic of covid-19.

3.6.2 Inferential analysis techniques

This is used for generalising obtained results from random sample that are back to population in which sample has drawn from it. It is analysed only when required for sample drawn for random procedure as well as response rate is very high. This analysis is collection of approaches that are used to assess features of presenting relationship among various variables, population and differences among various categories. In this analysis, it is important to determine factors that affect construction project completion on time in context of oil as well as gas sector in Kerteh, Terengganu during time period of Covid-19.

3.7 Ethical consideration

The accumulation of principles as well as values are focusing on addressing questions about good or bad in human context (Azizan, Pangil & Zin, 2021). The ethics searches for reasons leads to act or refrain from acting and not approved for conduct or believing vicious conduct. It is important for researcher to conduct research in ethical manner where they are required to follow proper rules and regulation for accomplishment of desired goals and objectives. An ethical consideration is defined as important part of research to provide accurate results. The different principles that are related with ethical consideration in context of research or dissertations are as follows:

Informed consent- The full consent is required to be obtained from respondents before conducting research study or work (Cheng & et. al., 2020). They should be made aware about project purpose, who or what group should be funded and adverse impacts of participations and access towards funding. Main purpose is making informed decision for participants in order to participate and evaluate.

Do not harm- The participants of research should not be harm in any context for carrying out activities and operations. The harm is in form of psychological as well as physical that can be pain, anxiety, stress, privacy. This is imperative which evaluate process and does not create any harm to any respondents.

Anonymity- It is regarded as form of privacy than confidentiality and participants have to remain unknown to research team (Chin, 2021). The confidence level of research data should be analysed. This is more difficult for achieving confidentiality as there are requirements of participants in context of social research for program coordinator.

Confidentiality- It is identifying information that is not available or accessed by anyone but with help of program coordinator. This ensures about identifying information that is excluded from published documents or reports. The small numbers in context of peer based program that

is essential for reports to ensure and no opportunity is available with people to identify information that is not used.

Voluntary participation- This is defined as people participation in evaluation that is free from coercion (Ching & et. al., 2021). Here, participation are free for withdrawing to make involvement in future service or current program as well as maintaining relationship with researchers. This is regarded as challenges to encourage high risk youth for engaged in research work and difficult for participants for choosing not to continue with same type of program. It is participant right for leaving program at any point of time. The high pressure need to be placed on those who have not continued with it.

Assessing relevant components- The important and relevant components should be assessed for program that has conducted (Cook, 2021). It is important for researcher to analyse all aspects and make effective decisions by considering significant data and information. While assessing components, it is rate them whether high important or less important and make best decisions.

Therefore, these all are important components of ethical consideration to make project work successful and accomplish set aim and objectives. This assists to know about right and wrong and accordingly following of values, principle and other aspects.

3.8 Summary

This report has summarized that research methodology assists in presenting a collection of methods that are used by researchers to represent the study and various research activities like collection, interpretation, and analysis of data and information (Cui & et. al., 2021). With the analysis of research work, it has concluded that the researcher adopted primary and secondary methods to collect data in order to identify opinion as well as the vision of various authors and completing research topic with help of respondents about a topic which is factors

affecting construction project completed on time in oil as well as the gas sector of Kerteh, Terengganu during the covid-19 pandemic. It also focuses on using qualitative and descriptive research methods and represented relationships among collected data as well as observation.



CHAPTER 4
RESULTS AND DISCUSSION

4.1 Introduction

In this chapter, the data collected from the questionnaires distributed will be analysed and interpreted in detail. The responses were collected from oil and gas construction company from Kerteh, Terengganu. The questionnaires that consist of 25 questions will determine the different parameters of the topic. Results and findings collected from the data analysis will be interpreted and discussed in this chapter. Overall results from all respondents as per following:

Questionnaire

Q1) In what manner COVID-19 impacted the businesses in oil and gas sector?	Frequency
a) Positive	17
b) Negative	3
Q2) According to you, what all the industries are there has been affected by COVID-19?	Frequency
a) Construction	4
b) Accommodation	7
c) Transportation	6
d) Others	3
Q3) Do you think total lockdown at some places restricted the availability of labours?	Frequency
a) Yes	18
b) No	2
Q4) Does restriction of crossing inter-state and inter-district delayed the transportation of materials and resources required for regulating the workflow?	Frequency
a) Strongly Agree	12
b) Agree	4

c) Neutral	2
d) Strongly Disagree	0
e) Disagree	2
Q5) According to you, does movement control affected the free flow of the work?	Frequency
a) Yes	16
b) No	4
Q6) As per your concern, Standard Operating Procedure impacted the communication and coordination system between various parties involved in the workplace?	Frequency
a) Strongly Agree	10
b) Agree	6
c) Neutral	2
d) Strongly Disagree	1
e) Disagree	1
Q7) Do you think proper implementation of rules and regulation related to COVID-19 led to the shortage of labourers?	Frequency
a) Yes	17
b) No	3
Q8) According to you, does the packages provided by the Government helped oil and gas construction companies in delivering effective results?	Frequency
a) Strongly Agree	8
b) Agree	6
c) Neutral	4
d) Strongly Disagree	2
e) Disagree	0
Q9) How political factors impacted the construction projects of oil and gas sector?	Frequency
a) Strict rules and regulations	2
b) Strict protocols related to interstate movement	2
c) Social distancing	4
d) All of the above	12

Q10) What are the factors that have affected the completion of construction project in oil and gas sector?	Frequency
a) Limited availability of resources	4
b) Shortage in number of labours	8
c) Cost and Budget	3
d) Transportation	5
Q11) What are the ways by which issues related to delay in construction project can be resolved?	Frequency
a) Proper planning and execution	2
b) Adequate availability of resources	6
c) Ample number of working labour force	7
d) Appropriate Funds	5
Q12) According to you who played the major role after lockdown?	Frequency
a) Constructor	3
b) Labourers	4
c) Suppliers	9
d) Owners	4
Q13) How technological assistance helped construction companies in executing their activities?	Frequency
a) Worked as a skeleton crew	11
b) Managing budget	4
c) Reduced the duration of work in progress	5
Q14) How COVID-19 has put any impact on the efficiency of the workers?	Frequency
a) Increased	4
b) Decreased	16
Q15) Mention the causes of decrement in the efficiency of workers?	Frequency
a) Decrease in the income.	12
b) Fear of losing their jobs.	6
c) Health and Safety concern	2
Q16) Does construction business faced any financial crisis?	Frequency
a) Yes	19

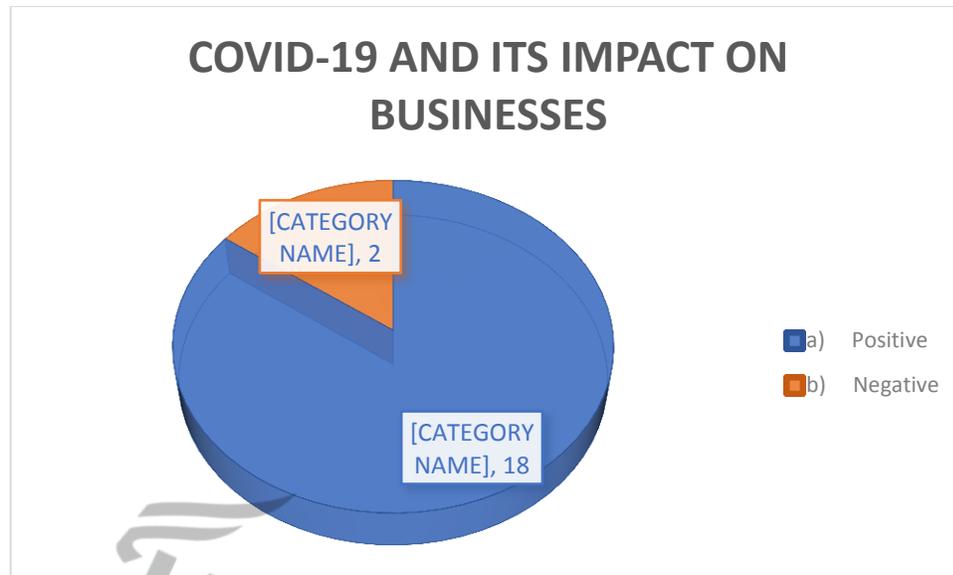
b) No	1
Q17) After COVID-19 what are the fear that are being faced by the workers?	Frequency
a) Problems related to health and safety	15
b) Working conditions	3
c) Follow of new rules and regulations	2
Q18) What are the reasons organisational efficiency?	Frequency
a) Decrease in the concentration of employees	6
b) Changes in norms and regulation	10
c) No proper supply chain	4
Q19) By the end of 2020, do you see any engagement of workers in the construction workplace?	Frequency
a) Yes	14
b) No	6
Q20) According to you, does the net profit of construction companies in the starting of 2021 has increased as compared to 2020?	Frequency
a) Yes	15
b) No	5
Q21) As per your concern, it is important that construction companies keep a backup plan for such pandemic situation?	Frequency
a) Yes	20
b) No	0
Q22) What are the strategies that a construction company must adopt for better performance?	Frequency
a) Conducting proper training and development sessions	5
b) Knowing about the requirements of customers.	8
c) Setting up Google service assistance	3
d) All of the above	4
Q23) What is the overall impact of Ciovid-19 on the construction line of oil and gas sector?	Frequency
a) Decline in profits	7
b) Decline in the number of employees	4

c) Decline in the value of business	6
d) All of the above	3
Q24) According to you, what should a construction company do for their sustainability and growth at competitive marketplace?	
Q25) According to you, what kind of suggestions you want to give to the construction company so that they can be future ready?	


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4.2 Data Analysis

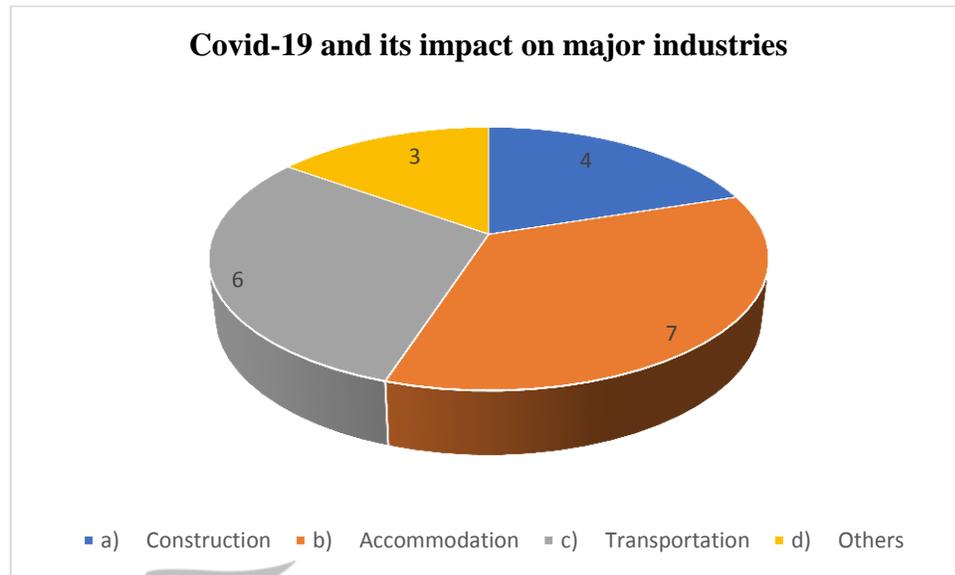
Q1. Title: Covid-19 and its impact on business



Pie Chart 1: Impact of Covid-19 on business

Covid-19 has impacted business in various sectors and declines their sales and profits margin. Due to lockdowns, business remained closed for approximately three months and creates difficulty for small enterprise to conduct their activities and operations. The presented diagram shows that covid-19 has created impact to business of oil as well as gas sector. From this, it has found that out of 20 respondents only 18 said it has impacted in positive way and remaining 2 said it has impacted in negative manner. Therefore, maximum customers are in favour that business is really impacted with pandemic in different aspects.

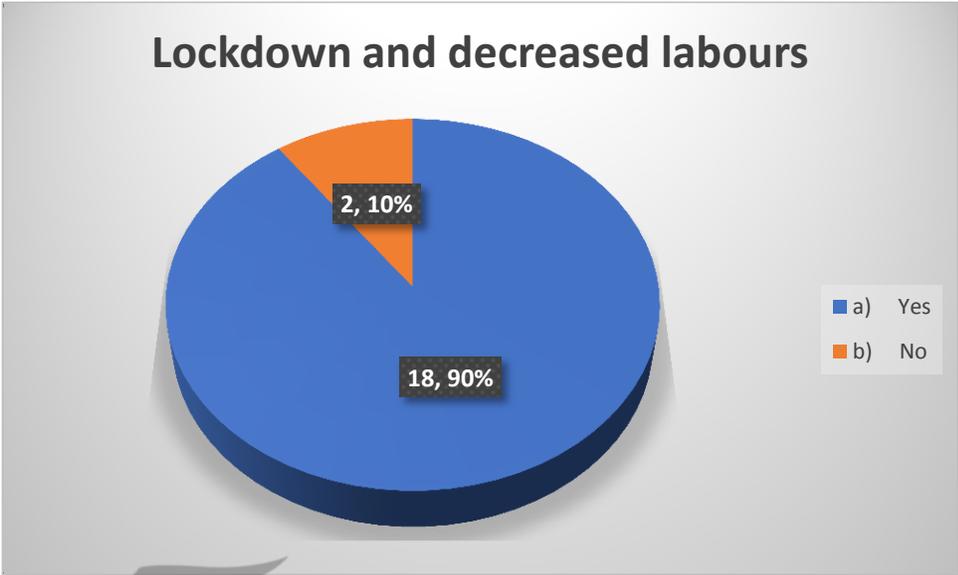
Q2. Title: Impact of Covid-19 on major industries



Pie Chart 2: Covid-19 and its impact

The covid-19 arises in 2020 and change entire world in negative. This pandemic is totally unexpected and impacted life of several people, business, industry and other to conduct activities and operations. As per my opinions, there are various sectors or industries that are impacted due to covid-19 such as construction, accommodation, transportation and others. The presented diagram concluded that out of 20 participants 4 favours for construction, 7 has said accommodation is impacted, 6 are in support of transportation and remaining 3 favours others. Out of these, maximum said, accommodation industry is impacted i.e hospitality sector.

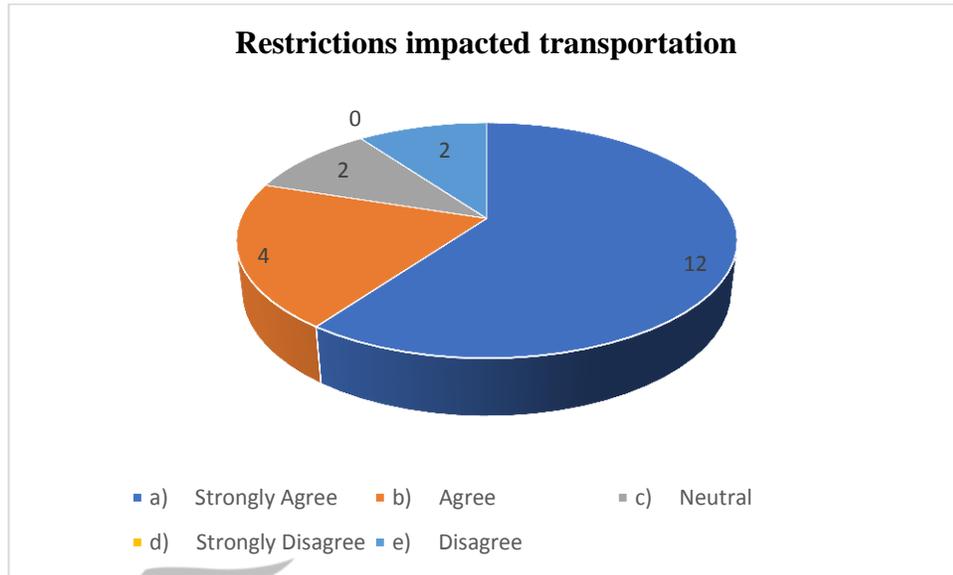
Q3. Title: Lockdown and decrease in labours



Pie Chart 3: Lockdown led to decrease in number of workers

The covid-19 has spread worldwide due to which several countries has imposed lockdowns in their place where only emergency services are available to them. The school, market all are closed for approx three months. This has made employees to carry work from home and other organisation has put restriction on number of workforce where they have set criteria of 30% or 50% as per guideline set by government. The lockdown has put restrictions on places and impact availability of labours. The above presented diagram has summarised that out of 20 respondents 18 said it has impacted labours availability and remaining 2 are not in favour of provided question.

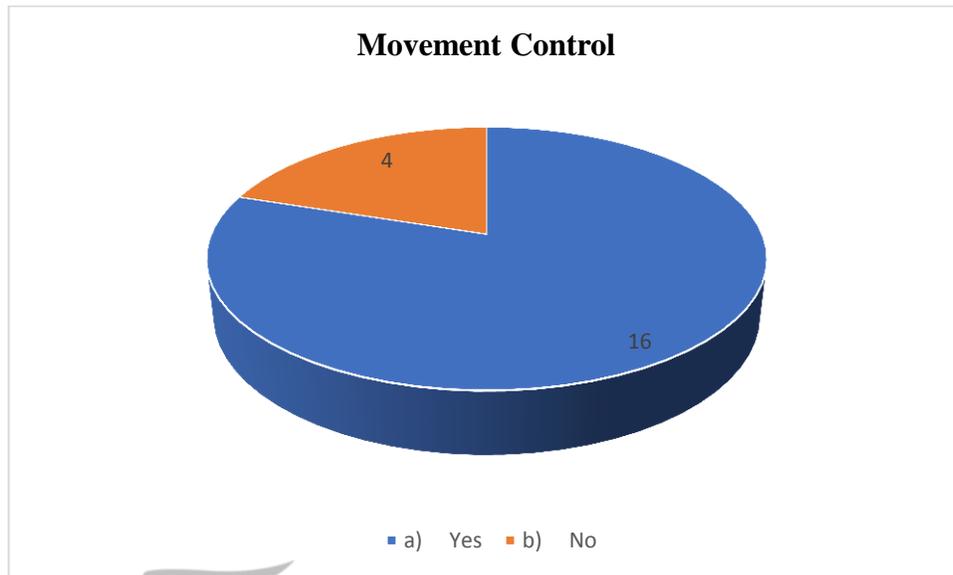
Q4. Title: Restrictions impacted transportation



Pie Chart 4: Restriction impacted transportation

The pandemic has imposed restriction on various aspects that leads to delay supply chain management. Their business faced difficulty to get timely receive of products and services. The restrictions to cross inter district as well as interstate have delayed transportation of materials as well as resources needed to regulate workflow. From the provided diagram, it has concluded that out of total 20 participants, 12 are strongly agree about statement, 4 are agree with their opinion, 2 are neutral, 0 are strongly disagree and remaining 2 are disagree with it. This is clear that many of respondents are strongly agree that pandemic has made restriction on crossing and delay materials and resources.

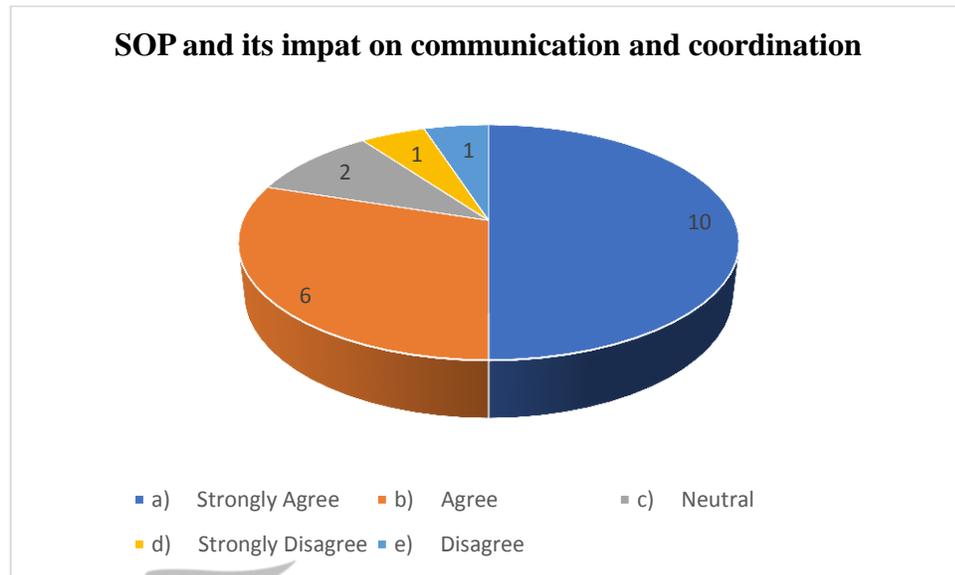
Q5. Title: Movement control affect the free flow of work



Pie Chart 5: Impact of movement control

There is restriction on supply chain management and flow of work has impacted in negative way. As per opinion, movement control has affected free flow of work in negative way. The presented diagram concluded that out of 20 respondents, 16 are in favour that movement control affected free flow of work and remaining 4 are not in favour of it. If there is control of movement then it will leads to maintain proper flow of work from one place to another.

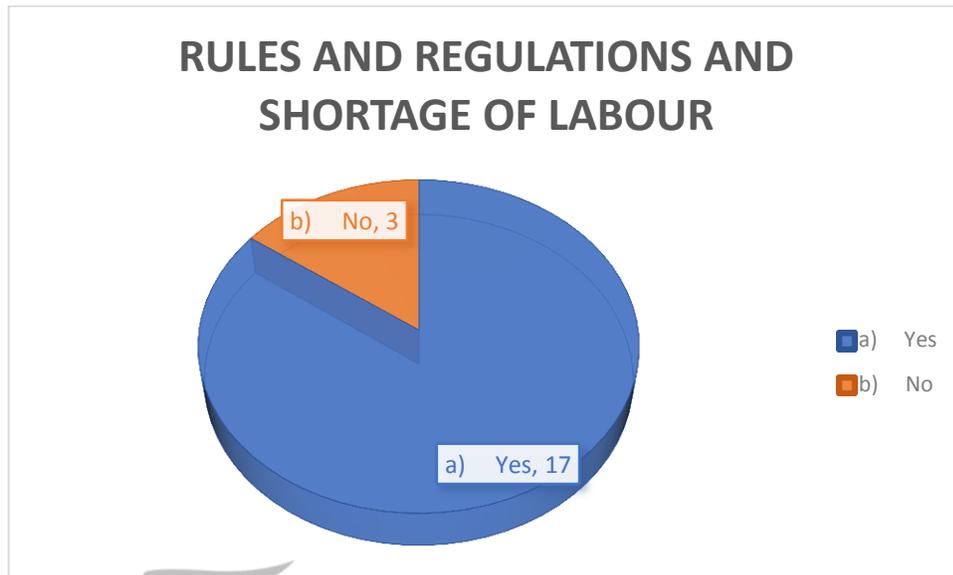
Q6. Title: Impact of Standard Operating Procedure



Pie Chart 6: Impact of Standard Operating Procedure

The business has to maintain proper standard in order to flow communication at workplace. Communication is very important for enterprise to carry out work and accomplish desired goals and objectives in effective way. The standing operation procedure is impacted with coordination as well as communication system among different parties who are involved at workplace. From the above presented diagram, it has summarised that out of 20 respondents 10 are strongly agree with statement, 6 are agree, 2 are neutral about statement, 1 is strongly disagree and remaining 1 is disagree. Maximum respondents are in favour of statement and agree that system is needed for contacting with different parties at workplace.

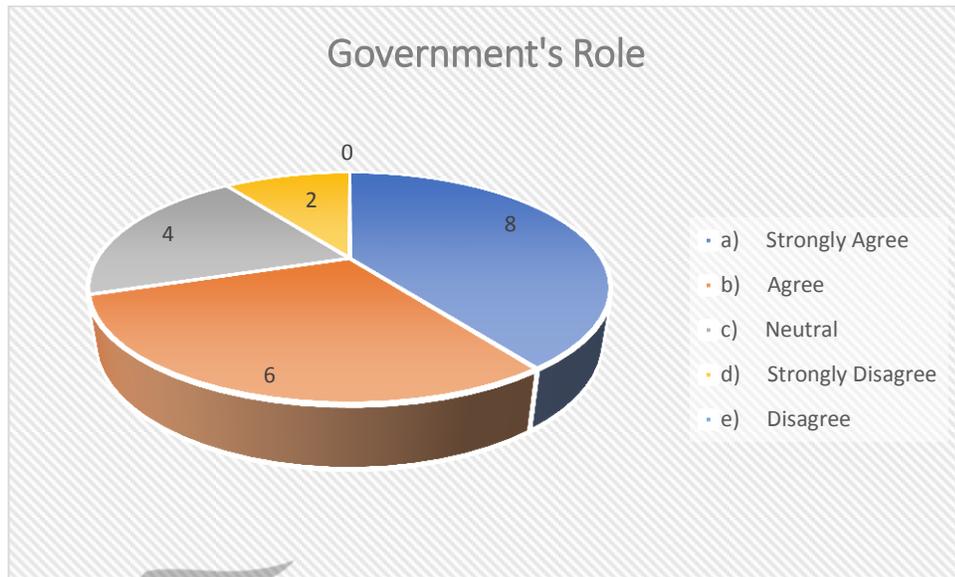
Q7. Title: Rules and regulations led to shortage of labourers



Pie Chart 7: Rules and regulations led to shortage of labourers

Covid-19 has put high restrictions on conducting business activities and operations. This has lower shortages of labour needed in respective industry. The rise of pandemic leads labour to move their home town without giving any notice to their manager as they faced problem for survival. The above diagram has presented out of 20 respondents, 17 are in favour that proper implementation of rules as well as regulation related with covid-19 leads to labour shortage and remaining 3 are not in favour of it. Maximum are in favour with the statement context with covid-19.

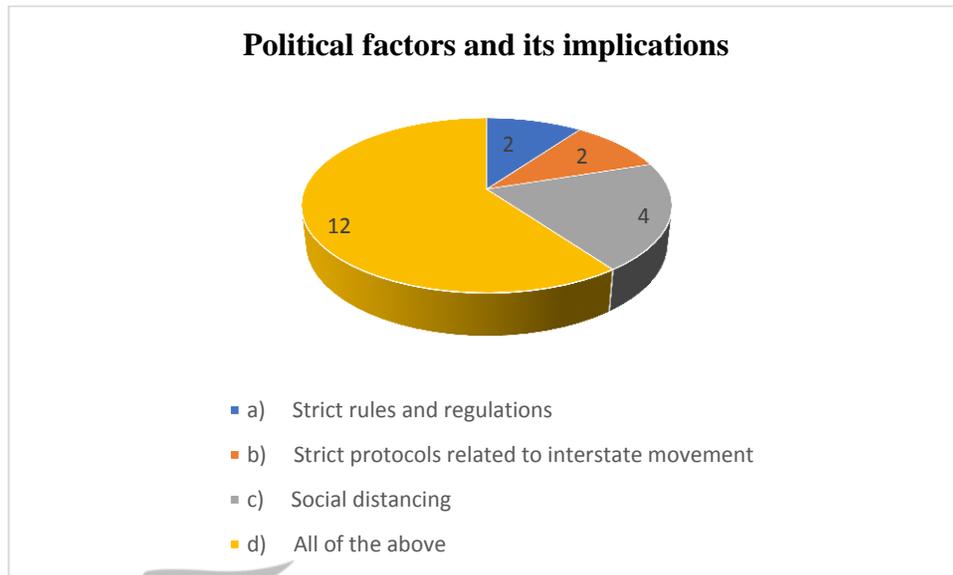
Q8. Title: Government's Role



Pie Chart 8: Government's Role

The construction required support from government so that they could survive at marketplace and carry out operations and activities. On another side, other businesses are also in need of assistance for their operations. In case of oil as well as gas construction companies, it is important for government to provide full support package in order to deliver positive results. From the above diagram, it has concluded that out of 20 respondents 8 said they are favour with provided statement, 6 are agree, 4 are neutral about their opinion, 2 are strongly disagree and none of them are disagree. It has found that maximum is strongly agree with provided statement.

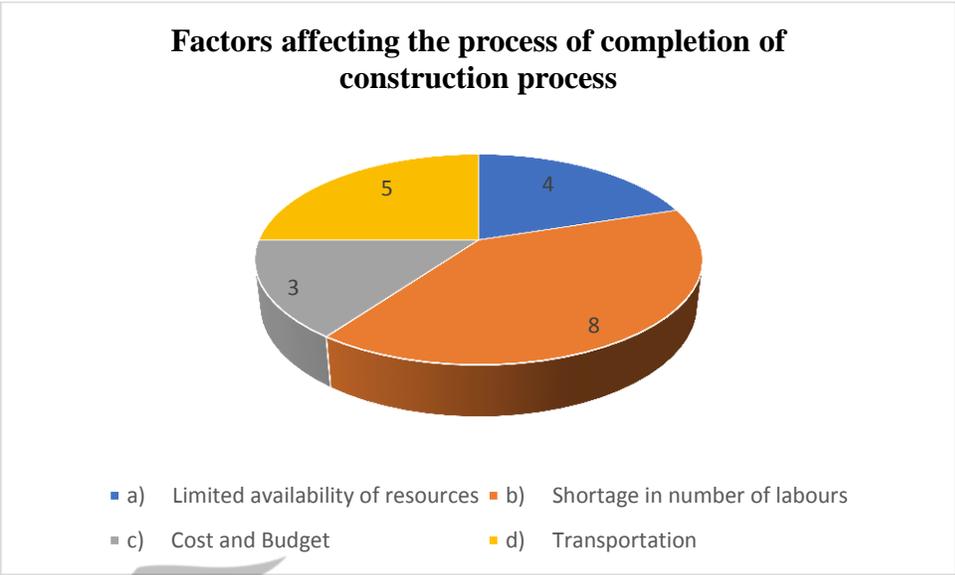
Q9. Title: Political Factors and its implications



Pie Chart 9: Implication of the political factors

The construction is impacted by internal as well as external factors to conduct various activities and operations in effective way. With the rise in pandemic create impacts to political conditions of business. The political factors that create impact on construction projects of oil as well as gas sector are strict rules and regulations, social distancing and strict protocols that are related with interstate movement. The above diagram concluded that out of 20 participants 2 of each said there are requirement of strict rules and regulations as well as strict protocols to interstate movement, 4 of them favours social distancing and remaining 12 favours all of above statements.

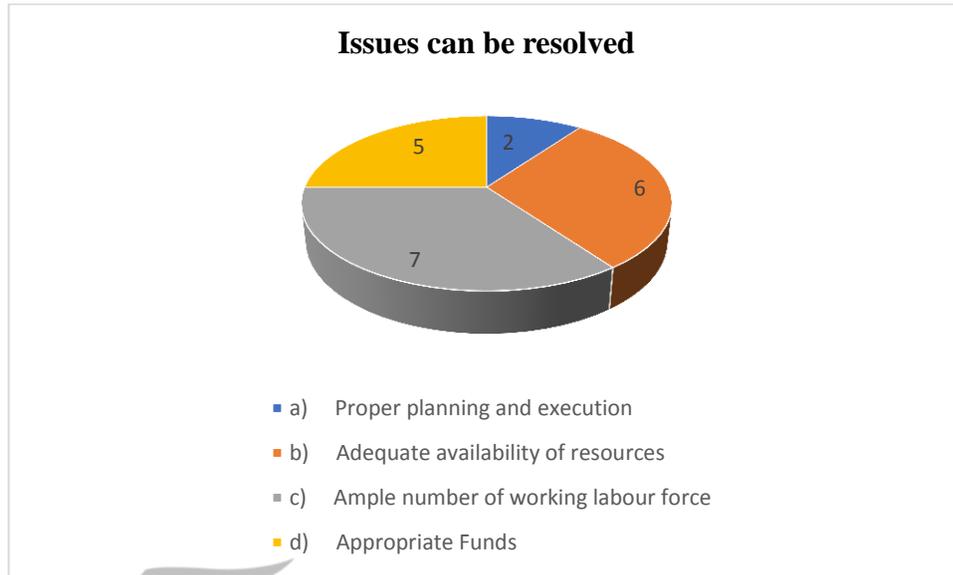
Q10.Title: Factors affecting the process of completion



Pie Chart 10: Affecting factors

The construction company is impacted with various factors which includes internal as well as external. This leads to create changes in existing running activities and operations of business in positive as well as negative manner. The different factors that have affected completion of construction project in context of oil and gas sector are limited availability of resources, shortage in number of labours, cost & budget and transportation. The above diagram has summarised that out of 20 participants 4 said limited availability of resources, 8 said shortages in number of labours, 3 favours for cost and budget and remaining 5 said transportation. Highest impact is due to shortage in number of labours.

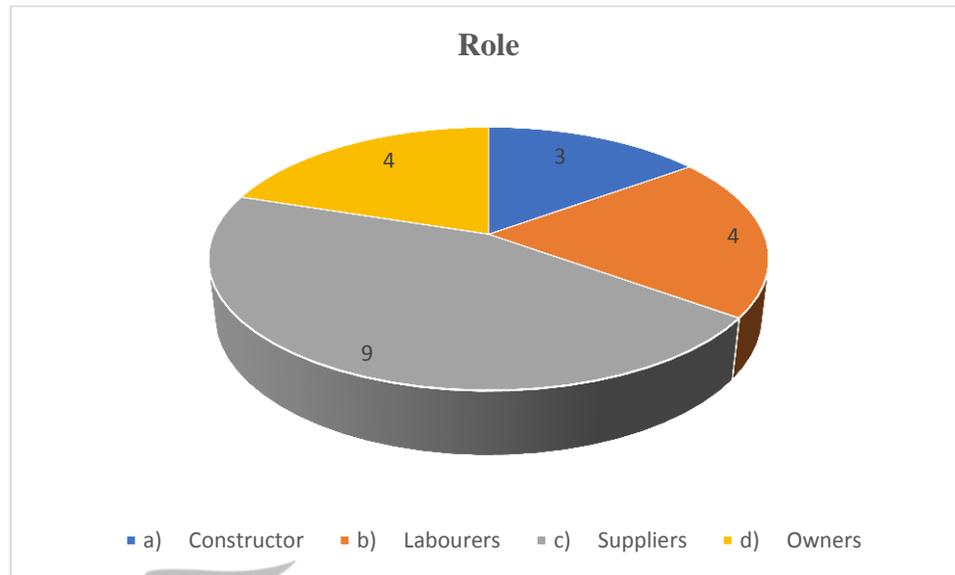
Q11. Title: Ways to resolve the issues



Pie Chart 11: Ways for solving the issues

With the rise in pandemic leads to create impact in construction project and company to accomplish desired outcomes in effective way. The different ways through which issues related to delay in construction project could be resolved are proper planning as well as execution, adequate availability of resources, ample number of working labour force and sufficient funding. The above diagram has concluded that out of 20 participants 2 have favoured for proper planning and execution, 6 has said adequate availability of resources, 7 favours ample number of working labour force and remaining 5 favours for appropriate funding. It has found that maximum number of labours leads to solve delay issues for construction projects.

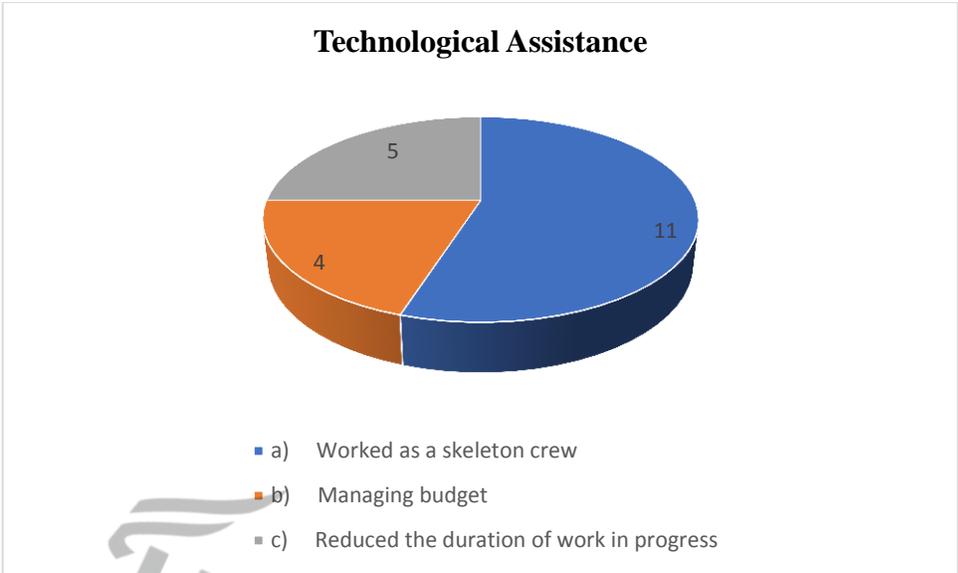
Q12. Title: Who played the major role



Pie Chart 12: Major role

The pandemic has created severe impact in construction, project planning and other activities and operation of business for running work in significant manner. This has led every individual to play significant role for positive results. The major roles played after lockdown are constructor, labourers, suppliers and owners. From the above diagram, it has concluded that out of 20 respondents 3 favours for constructor, 4 said labourers, 9 indicated suppliers and remaining 4 said owners. The maximum role played after lockdown is suppliers as they are individual who helps in transportation of goods from one place to another as per need and demand of business and customers to meet their requirements.

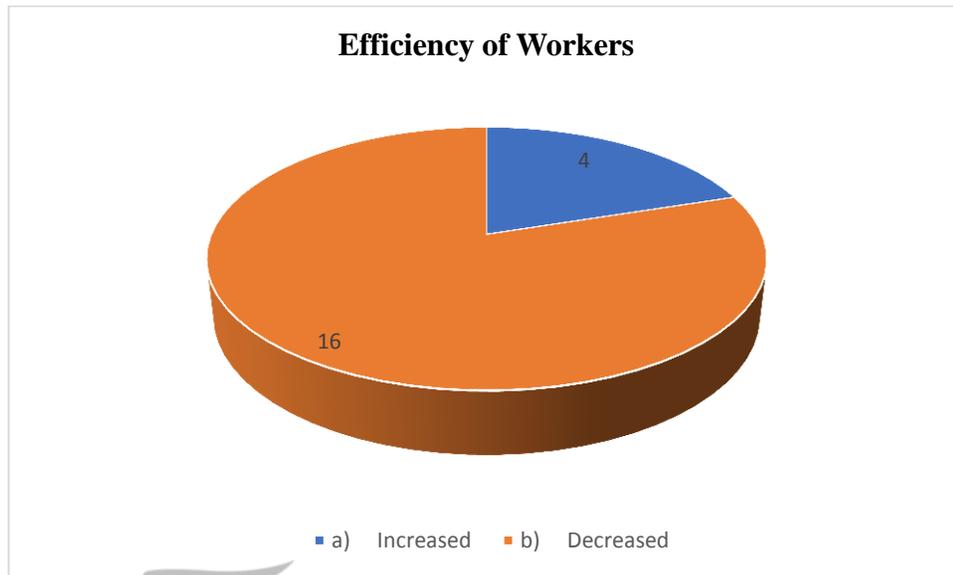
Q13. Title: Importance of technological assistance



Pie Chart 13: Technological assistance

Pandemic has impacted entire business, organisation and people in negative way. During pandemic, when nations were lockdown, only technology helped to connect with people and partners for further operations and activities. In this context, technological assistance has also helped construction companies in order to execute their activities such as worked as skeleton crew, managing budget and reduction of duration of work in progress. From the above analysis, it has concluded that out of 20 people, 11 said technology helped in worked as skeleton crew, 4 favours for managing budget and remaining 5 favours reduction of duration at time of work in progress.

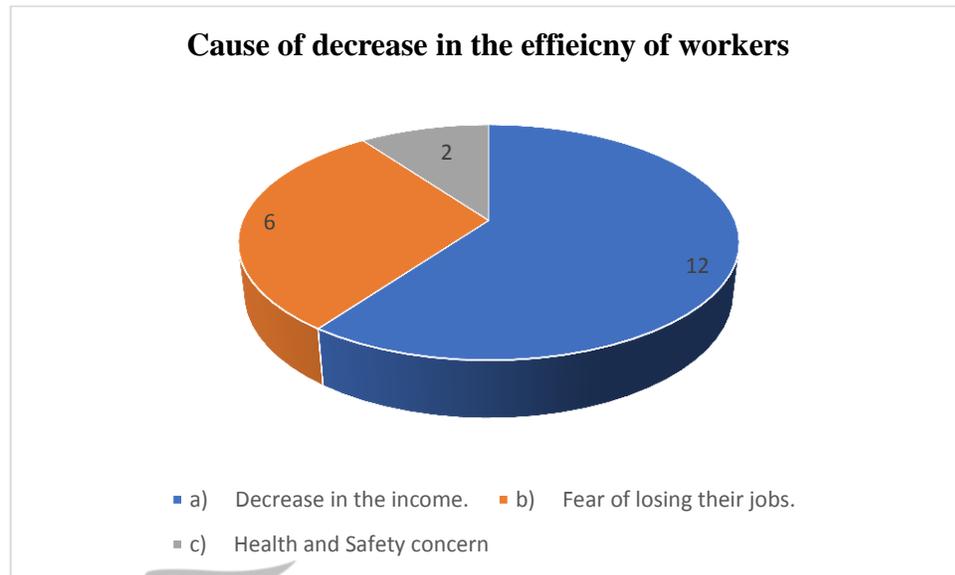
Q14. Title: Impact of Covid-19 on the efficiency of workers.



Pie Chart 14: Efficiency of workers

When pandemic arises, company make their employees to get work from home and complete given work in stipulated time period. The lockdown has made people lazy as there is no fixed timing for any activities and work as per their convenience. In this context, it is not possible for business to make observation for each employee. Here, covid-19 has created impact on efficiency of workers in terms of increase as well as decreased. The above diagram concluded that out of 20 respondents 4 said it has increased efficiency of workers and remaining 16 said decreased in efficiency. In reality, covid-19 has decrease efficiency of workers and make people lazy to carry set operations in effective way.

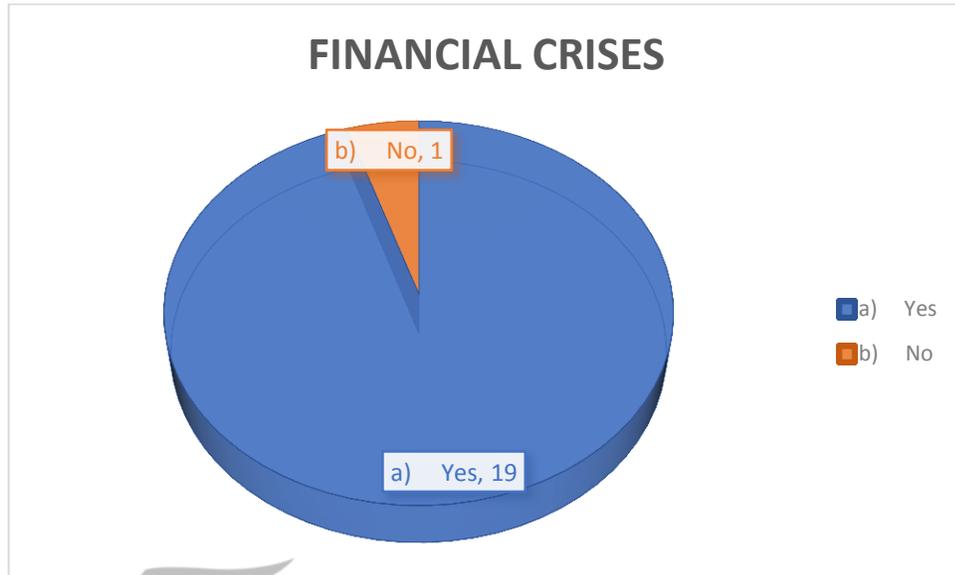
Q15. Title: Cause of the decrease in the efficiency of workers



Pie Chart 15: Reasons for decrease in the efficiency of workers

Covid-19 has created problem for survival at competitive marketplace due to several reasons in terms of firing from job, unable to meet family requirements. The covid-19 has impacted efficiency of workers and main reasons for it are decrease in income, fear of losing jobs and health and safety concern. From the above diagram, it has concluded that out of 20 respondents 12 favours for decrease in income, 6 said fear of losing their jobs and 2 said concern for health and safety. Here, maximum employee's efficiency reduced due to decrease in income.

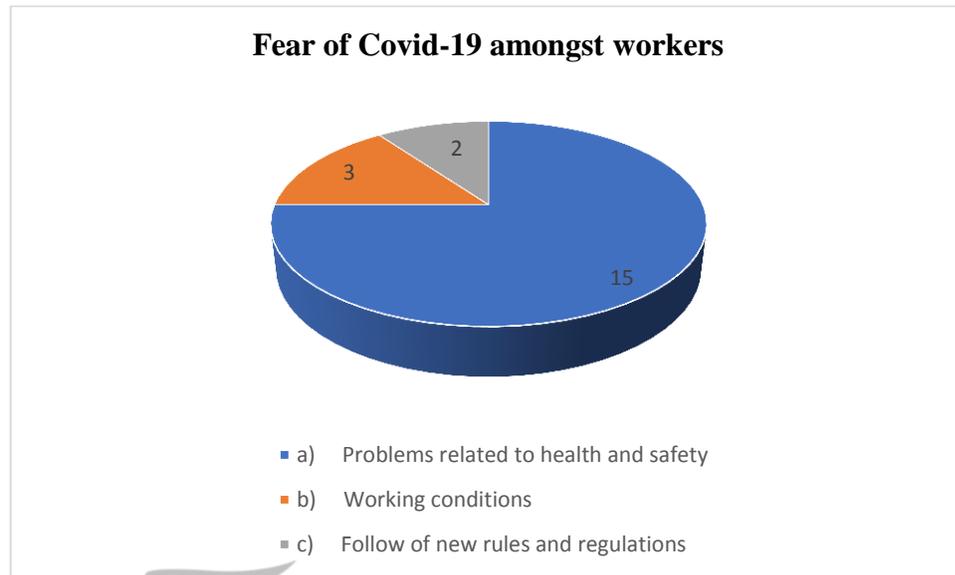
Q16. Title: Financial Crisis



Pie Chart 16: Financial; Crisis

The pandemic is unexpected and outcomes of it are totally unbearable such as loss of life, lockdown, problems in supply chain, lack of transport facility for movement, high restrictions. The construction business has faced financial crisis due to pandemic. From presented diagram, it has summarised that out of 20 participants 19 favours that construction faced financial crisis and remaining 1 does not favour it. This can be said that financial crisis is very common for all types of business during pandemic and difficulty to overcome as it will take maximum time to get back to normal situation.

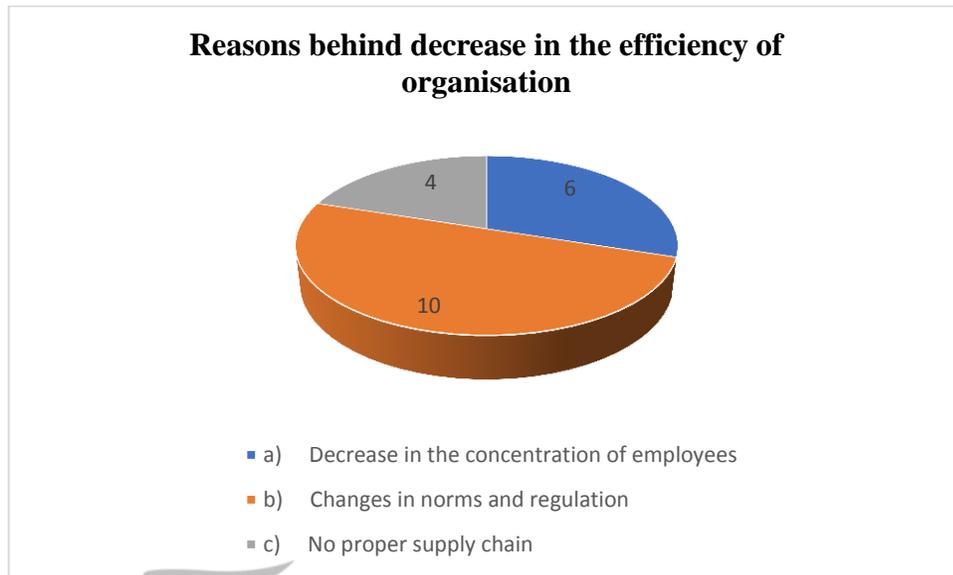
Q17. Title: Fear faced by workers due to Covid-19



Pie Chart 17: Fear of Covid-19

The pandemic leads to lockdown for approx. three months' time period and put high restrictions in country to conduct activities and operations. It is not easy to carry out work in same manner after lockdown. Here, construction company's employees have faced fear in terms of problem related with health and safety, working conditions and following of new rules and regulations. From the above diagram, it has concluded that out of 20 respondents 15 said they are fear of problem related with health and safety, 3 favours for working conditions and remaining 2 said following of new rules and regulations. The large number of employees are fear of health and safety as low immunity system person are highly caused to have covid positive than high immunity system.

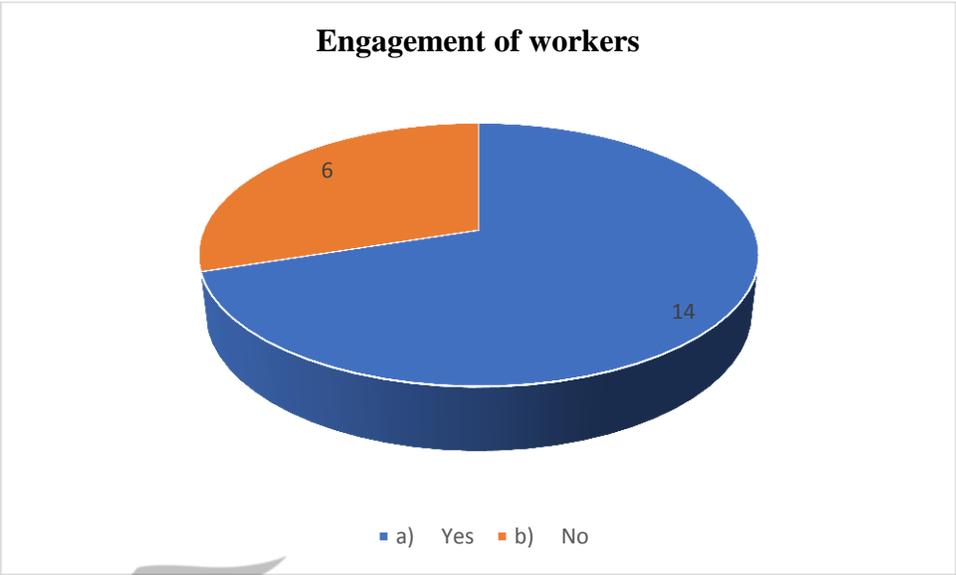
Q18. Title: Organisational efficiency



Pie Chart 18: Reason behind organisational efficiency

Covid-19 has change the scenario of world in negative way and created difficulty for better results. This pandemic not only impact individual in terms of their health or safety but entire world for conducting work performance. In context of organisation, the different reasons of efficiency are decrease in concentration of employees, changes in norms and regulations and no proper supply chain. The above figure concluded that out of 20 people 6 said main reasons for efficiency in business is decrease in concentration of employees, 10 prefer changes in norms and regulations and 4 said no effective supply chain. Main reason for decrease in business efficiency is due to changes in norms as well as regulation.

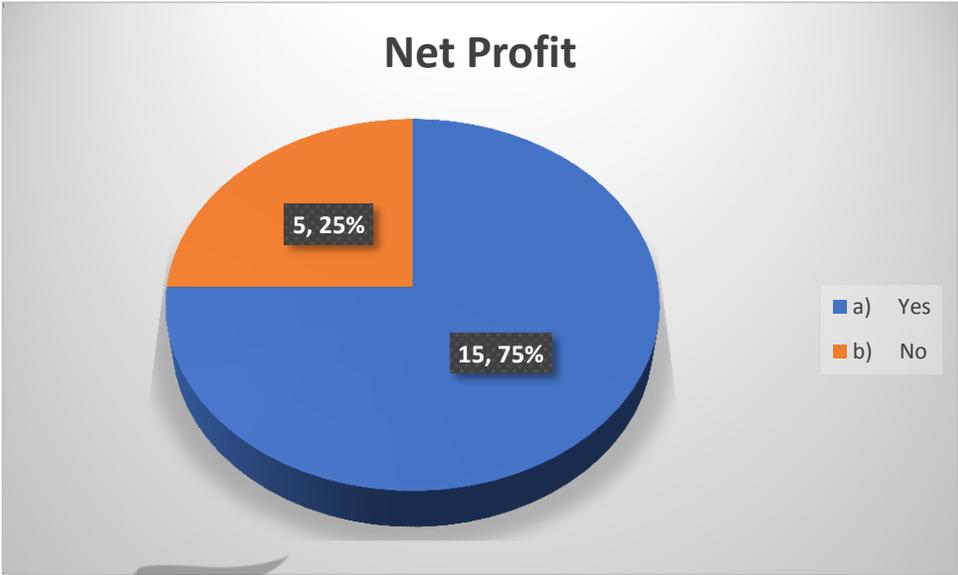
Q19. Title: Seen any engagement of workers



Pie Chart 19: Engagement of workers

The construction business has faced delay in overall activities and operations to accomplish desired outcomes. During pandemic, many of the employees working in construction business have left work as there is required high safety and security. With the end of 2020, there is engagement of workers in context of construction workplace. The above diagram has concluded that out of 20 respondents 14 favours that there is engagement of workers and remaining 6 said they are not engaged in business activities and operations. The oil as well as gas line construction company need a greater number of employees to operate their activities and operations and accomplish desired outcomes in most effective way.

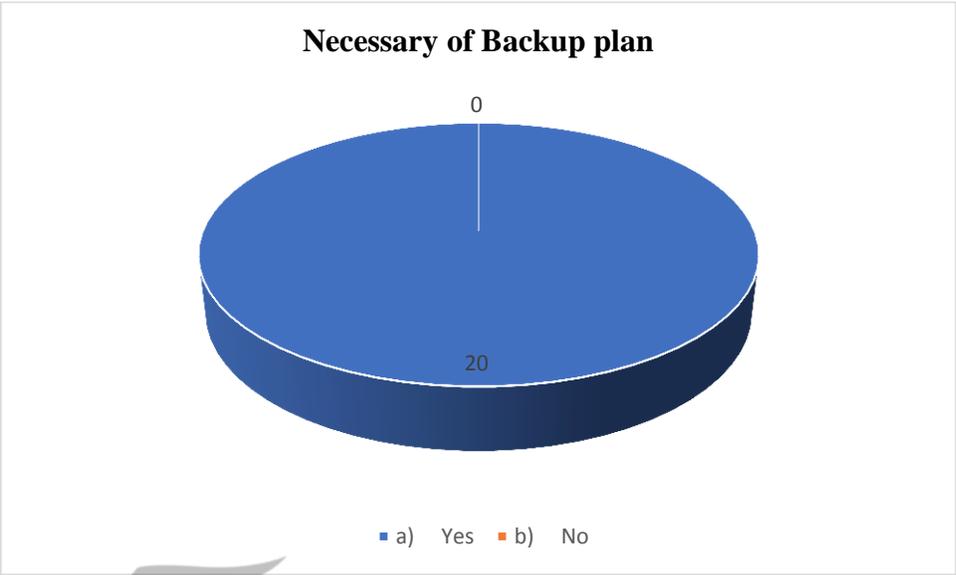
Q20. Title: Situation of Net profits



Pie Chart 20: Net Profit

When business initiated their activities and operations after lockdown, they have slow down their profits. There was only some business who has earned good amount of profits. It is important to analyse about construction companies whether they have increase net profits in 2021 as compared to 2020. From the above figure, it has concluded that out of 20 respondents 15 said profits has increased and remaining 5 said profits has not increased. There were many pending projects that have been completed and new projects also assigned to Construction Company for carrying out activities and operations. It is opportunity for respective business to raise their profit margin and attain high success and growth.

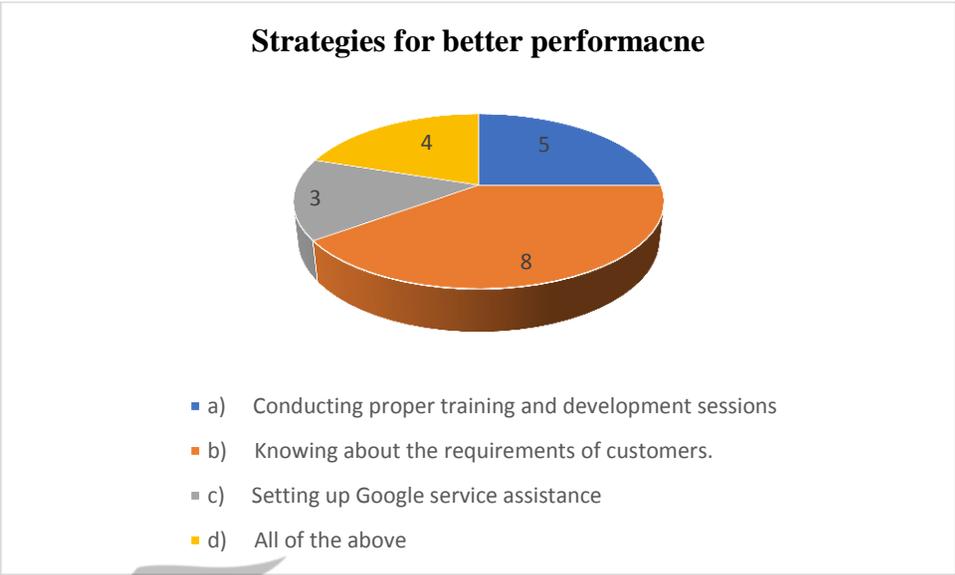
Q21. Title: Importance and necessary of keeping a backup plan



Pie Chart 21: Necessary of keeping a backup plan

The business is running their operations and activities at competitive marketplace, so it is important to make contingency planning in case of emergency situation to overcome from arise issues and problems. This is important for Construction Company to make backup plan for such pandemic situation in terms of number of employees required, following of rules and regulations and other to gain positive results. From the above diagram, it has concluded that all 20 participants favour same as none of disagree with it. The backup plan guide respective business to take move for future so that they can overcome from all types of arise issues and attaining positive results.

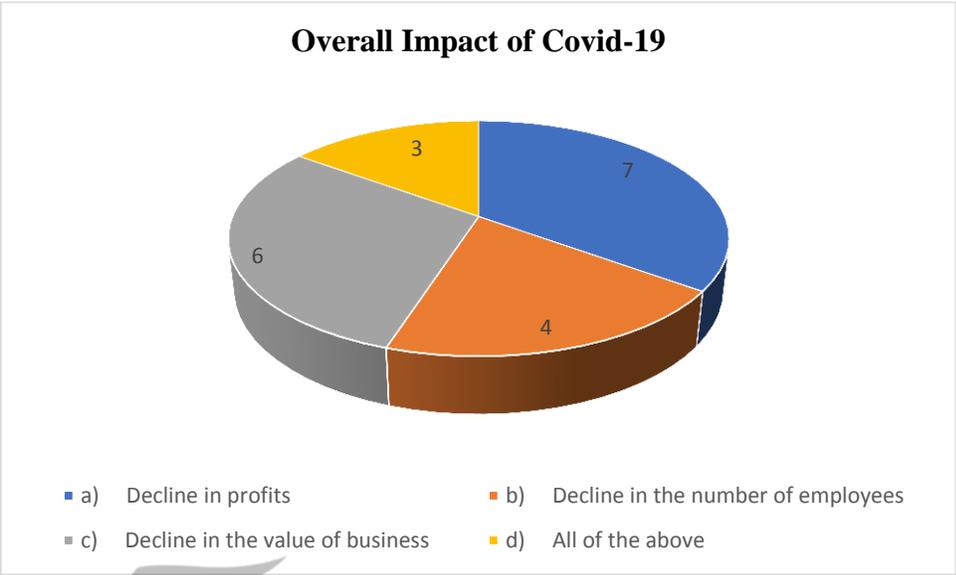
Q22. Title: Strategies which can be adopted by construction company for effective performance.



Pie Chart 22: Strategies for better performance.

It is important for Construction Company to apply various types of strategies in order to overcome from pandemic situation and carry out set operations and activities. The strategies include conducting training and development session, knowledge about customer requirements, setting up Google service advertisement. The above diagram concluded that out of 20 respondents 5 said conducting training and development session, 8 favours for knowing about customer requirement, 3 are setting Google service advertisement and remaining 4 favours all of them. This is important to apply such strategies so that they could attain desired outcomes in stipulated time period for high results.

Q23. Title: Overall impact of Covid-19



Pie Chart 23: Overall Impact of Covid-19

The covid-19 is unexpected pandemic for worldwide to work and accomplish desired goals and objectives. This has created various impacts to Construction Company for carrying out set activities and operations. The main impact of covid-19 on oil as well as gas line Construction Company are decline in profits, decline in number of employees and decline in value of business. From the above diagram, it has concluded that out of 20 respondents 7 favours decline in profits, 4 favours decline in number of employees, 6 said declines in value and remaining 3 favour all of them. It is essential to know type of impact created to Construction Company to accomplish better results. These impacts are common for all types of business at time of covid-19. The highest impacts are decline in profit margin due to closure of many enterprises during such phase.

Q24. Task a construction company can do for having sustainable and growth at competitive marketplace.

It is important for Construction Company to maintain their sustainability as well as growth at competitive marketplace through different way. Most important aspect is to conduct market research after covid-19 to know about actual need and demand of customers required providing of products and services. They are required to make contingency or backup plan in emergency situations for their set strategies. In the era of competition, it is necessary to meet with market requirement and following of rules and regulations set by government for such business to conduct operations as well as activities. Therefore, it is significant to make proper analysis of all aspects that are considered at time of business work to avoid future failure or other type of issues.

Q25. Suggestions to the construction company in relation with such pandemic in near future.

This is important to provide proper suggestions to Construction Company for bright future and success of enterprise. The first is prioritising talent management where Construction Company required skilled and capable workforce for work performance. This helps to win for talent and make to achieve long term approach. Second suggestion is rejuvenating corporate culture where they have to develop tunnel boring machine as well as creating underground roadways for doing construction work. Third suggestion is investing in diversity where workforce persists of male employees having engineering background and adopting demographic changes for digital transformation. Construction companies are in need of tapping into non-traditional pools such as community specialists, women having IT backgrounds or data science. Fourth is leverage technology as well as innovation in which they have to embrace innovation as well as new technologies that do not make future ready and meet with talent challenge. The rise in automation, off site prefabrication, new collaboration tools all leads to enhance productivity along with reduces time spent at site. These innovations are regarded as

standard in case of Construction Company and work with human robot collaboration, ergonomic work processes and others.

4.3 Hypothesis Testing

H₀: Movement Control Order by government during Covid-19 pandemic has a negative impact on the construction project completion in oil and gas sector of Kerteh, Terengganu.

H_a: Movement Control Order by government during Covid-19 pandemic has a Positive impact on the construction project completion in oil and gas sector of Kerteh, Terengganu.

The table below shows the opinion of 20 respondents as (yes = 1 and no = 2) in the context of positive or negative impact on the construction project completion in oil and gas sector of Kerteh, Terengganu:

Positive	Negative
1	2
1	2
1	2
1	2
1	1
1	1
1	1
1	1
2	1
2	1
2	2

2	2
2	2
1	1
1	1
1	2
1	2
2	1
2	2
2	1

T test for the above observation

	Variable 1	Variable 2
Mean	1.4	1.5
Variance	0.252632	0.263158
Observations	20	20
Pearson Correlation	0	
Hypothesized Mean Difference	0	
df	19	
t Stat	-0.6227	
P(T<=t) one-tail	0.270442	
t Critical one-tail	1.729133	
P(T<=t) two-tail	0.540884	
t Critical two-tail	2.093024	

Interpretation: The value of P that is (0.55) which is above the standard (0.5) value states that hypothesis stated above will be accepted. It strongly agree that movement Control Order by government during Covid-19 pandemic has a Positive impact on the construction project completion in oil and gas sector of Kerteh, Terengganu.

H₀: Several factors impact the timely completion of oil and gas sector construction projects.

H_a: Very limited factors impact the timely completion of oil and gas sector construction projects.

The table below shows the responses (yes = 1 and no = 2) of 20 candidates in the context of factors which impact the timely completion of oil and gas sector construction projects:

Few factors	Several factors
1	1
1	1
1	1
1	1
1	1
1	2
1	2
1	2
2	2
2	2
2	1
2	1

2	1
2	1
2	2
1	2
1	2
2	2
2	2
2	2

	Variable <i>1</i>	Variable <i>2</i>
Mean	1.5	1.55
Variance	0.263158	0.260526
Observations	20	20
Pearson Correlation	0.100504	
Hypothesized Mean Difference	0	
df	19	
t Stat	-0.3258	
P(T<=t) one-tail	0.374068	
t Critical one-tail	1.729133	
P(T<=t) two-tail	0.748137	
t Critical two-tail	2.093024	

From the above table it is determined that value of p which is (0.38 approx) far below the actual value of p that states that the hypothesis states above is rejected. As there have been several factors impact the timely completion of oil and gas sector construction projects.

4.4 Discussion

As we all know that the sudden outbreak of Covid-19 has impacted each and every sector of the society. Whether the company is running its business in small, medium or large section their economy has deteriorated very badly. During this pandemic, companies running their business in oil and gas sectors were also impacted and according to the data collected Covid-19 has put a negative impact on the business of oil and gas sector and its construction related work. Companies faced difficulties in transporting goods and other resources from one place to another. However, the main reason behind this was restricted rules and regulations in order to curb the hype in Covid-19 cases. For example, shortage of number of labourers stagnated the regulation of the workflow. Due to the severity of the disease workers left their jobs and this led most of the companies towards financial crunch. Moreover, maintaining a proper coordination between systems and various parties got affected. Meanwhile, it is also believed that, combination of all these political factors such as strict rules and regulations, social distancing, very strict protocols and so on, put a break on the construction companies and their related activities.

Appropriate funds play a major role in executing managing task different task in a company. It helps in developing a proper plan as per the funds allocated. Therefore, from the data collected it can be analysed that, even being a prominent part of the country's economy, oil and gas sector found difficulty in managing their tasks. As a result, company forcefully, eliminated some its workers and employees from the job. However, technological assistance worked as a boon of oil and gas sector because it worked as a skeleton crew in some of the

fields and this somehow pushed the action to some extent. Covid-19 not only impacted socially and economically but it impacted mentally to great extent. The disease developed a sense of fear in the minds of people and decreased the efficiency of workers. In order to exclude themselves from getting affected by Covid-19 people were had to follow protocols, a new working condition were implemented etc., However, over the period of time, for instance by the end of the year 2020 an increase in the engagement of workers in the construction workplace was seen which denotes that people are accepting the new normal and they are working accordingly



CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Recap of Major Findings

COVID-19 came up as a major challenge for the construction companies, and it has also disrupted the global economy. With respect to the current situation, many construction companies are facing difficulties in obtaining a permit for starting of their new projects as well as the projects that are on hold. The reason being, the new guideline, and protocols formulated by the government i.e., maintaining social distancing. Due to this, companies are forced to cut down their labor force as compared to what they are required. Limiting the number of laborers in pushing their projects towards uncertainty and in the procession of delay. However, if the construction companies are opening their doors there is a possibility that they are more reluctant to the exposure of COVID-19. Nevertheless, in most instances, workers are themselves not willing to join their work because of health and safety measures.

From the above report, it has been concluded that delay in the construction company of oil and gas sector is universal and the main reason behind this is because of the unique nature within which the activities of construction are being carried out. There is a need for specialized materials, equipment, skilled labour, cost-effective measures, and time schedules. The aim of the study was to analyze the effect of COVID-19 in the construction process of the oil and gas sector. The objectives of the study helped in exploring the various reasons for delays along with the circumstances that arise in managing construction schedules. Moreover, with the help of a literature review, the researcher put all the information together and framed a conceptual framework. The oil and gas industry is an integral part of the country had to face many issues due to COVID-19. After evaluating the above report, it has been concluded that workforce and shortage of employees created a lot of problems. The company had to rely on Skelton crews in order to accomplish their work. Moreover, in large construction sites maintaining social

distancing became a prominent work as all the departments are interconnected, and dropping any of them might lead to a negative result. However, we cannot confine with only two reasons for the delay in construction activities i.e., availability of labors and raw materials required. There is one big reason which is the government announcement of lockdown for a couple of months forced the companies to hold their entire work. As a result, it gave rise to a situation of delay and the conduction of operations in a better manner. Due to lockdown in certain places, workers were obligated to return to their native place moreover, companies claimed health and safety as the major concern because of which they are sending people back home. The findings of the research project will further help in finding the other factors because of which the construction activities in the oil and gas sectors are being affected. For example, keeping a stock of required materials and other items so that the process of action keeps on moving. Moreover, management should have a management team that can take calculative measures if there is a situation like COVID-19 in the future. Other than this, it was also evaluated that company can make use of technology in a proper manner like for keeping a record of people who are coming to work because the new COVID-19 protocol obligated companies to operate their functions in shifts.

If we consider the data and information collected from the respondents then they also believe that yes, COVID-19 has impacted the oil and gas sector in a positive manner as their sales and profitability crashed down. However, companies from all sectors get affected because of COVID-19, and according to them, there is a need of taking precautionary measures by the government if any situation like this arises in near future. Some of the respondents also believed that the sudden decision of implementing a lockdown was not appropriate as it caused huge losses to the company. There were no proper transportation processes as strict rules and regulations were imposed which directly and indirectly affected the workflow of the company.

5.2 Implication of the Study

In the literature review part, however, the cause of delays has been explained in a deeper manner and the findings indicate that proper scheduling of activities and the sudden outbreak of this disease is the reason for the delay in the construction activities. Not so effective procurement and improper management system caused inadequate allocation of funds. Therefore, the construction companies are left with no choice but to hold their activities for a couple of days or months.

5.3 Limitation of the Study

While conducting this research, there were several limitations that were faced by the researcher. First, the questionnaire developed for conducting the research not represented all the cause and effect that are generally faced by a construction company. The results accumulated only represent a small portion of the cause and effect. Moreover, the questionnaire was only distributed in Kerteh, Terengganu, Malaysia because of the time constraint for conducting the research.

5.4 Recommendation

As the situation of COVID-19 evolved it becomes crucial for the companies and their owners to have a proper analysis, so that, after making some kind of changes they can manage their projects effectively. After analyzing the entire report, it has been recommended that owners of the oil and gas sector should have access to their contractual obligations so that they can have a backup and validate plate for achieving their milestones and objectives. Company owners should go with a specific approach in this pandemic so as to evaluate the overall progress of the plan and should be eligible to make a recovery road map for eliminating failures.

It is recommended that the company should have a look at the contract review. This will help them in having a proper understanding of the provision and relief elements that the

company is eligible for claiming in this pandemic. For example, checking “force majeure” will help the company and the owner in protecting the contract from events that are beyond their control. However, if there are no such events as “force majeure” in the contract then there is a need for discussion between both the owners and the contractor. After analyzing the contract review the next step which needs to be looked after is the project impact. In this, the company can analyze the damage they have suffered during this pandemic. The company can classify the same into five categories like cost: there should be a separate tracking system for bifurcating the amount on the basis of damages and the performance barriers. For example, the COVID-19 cost should be tracked on the basis of how much it has impacted the scope of the work, general conditions, the number of equipment that were idle, and lastly the extra preventive measures like thermal screening of employees on an everyday basis. Schedule: Company should have a proper account of the idle time and they should be eligible in evaluating the same. This will help them in evaluating the cost and the scheduled delay that happened in the work. Therefore, the company should have a proper system for making all the entries and they should also update all the activities on a regular basis. Resources: Company should have a proper check on the resources available to them because during this pandemic safety equipment and its other related items are the biggest concern. Logistics: lockdown has put a huge impact on the logistic system as the movement of vehicles from one place to another was restricted. As a result, it obstructed the transportation of materials, shipments, and various critical components regarding construction activities. Therefore, it is recommended that the company should have an ample number of stocks and construction material so that they can be future-ready for any other pandemic. Quality: During this pandemic, quality is the factor that was compromised and it was majorly because of the availability of skilled personnel and a limited number of resources. Every individual was in a fear of getting infected with this disease thus, most people for the sake of their life left their job. However, as a backup plan, it is recommended that the oil and gas sector should divide their shifts so the work can be regulated.

COVID-19 has occurred as an unknown risk and people were not having any idea regarding the measures and the ways by which the disease can be controlled. Although this pandemic is not over yet it has taught us many things like always be ready for such circumstances, manage the activities with the limited resources, proper mitigation plan for addressing the various components of risks and so. After this pandemic happened to us, it is recommended that the company should have a development plan which can visibly show the results and project activities. For example, in the development plan company can specify some forecasted milestone dates, so that in the future if any such pandemic happens then they can have a record of how much impact (the pandemic) has put on the actions of meeting the project's business objectives. Moreover, it is also recommended that the company can grab the opportunity to shorten the project duration. This will not only reduce the cost budget but will also help the company in completing the construction activities in a shorter period of time. However, all these actions discussed can fall into plans when the various actions are communicated properly. Communication, in a sector like oil and gas, is one of the essential components because the sector includes numerous departments, and to make things happen properly it is important that well-established coordination is made. Thus, an effective communication process helps the company in doing so.

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Questionnaire

- Q1) In what manner COVID-19 impacted the businesses in oil and gas sector?
- a) Positive
 - b) Negative
- Q2) According to you, what are the industries there has been affected by COVID-19?
- e) Construction
 - f) Accommodation
 - c) Transportation
 - d) Others
- Q3) Do you think total lockdown at some places restricted the availability of labours?
- a) Yes
 - b) No
- Q4) Does restriction of crossing inter-state and inter-district delayed the transportation of materials and resources required for regulating the workflow?
- a) Strongly Agree
 - b) Agree
 - c) Neutral
 - d) Strongly Disagree
 - e) Disagree
- Q5) According to you, does movement control affected the free flow of the work?
- a) Yes
 - b) No
- Q6) As per your concern, Standard Operating Procedure impacted the communication and coordination system between various parties involved in the workplace?
- a) Strongly Agree
 - b) Agree
 - c) Neutral
 - d) Strongly Disagree
 - e) Disagree
- Q7) Do you think proper implementation of rules and regulation related to COVID-19 led to the shortage of labourers?
- a) Yes
 - b) No

Q8) According to you, does the packages provided by the Government helped oil and gas construction companies in delivering effective results?

- a) Strongly Agree
- b) Agree
- c) Neutral
- d) Strongly Disagree
- e) Disagree

Q9) How political factors impacted the construction projects of oil and gas sector?

- a) Strict rules and regulations
- b) Strict protocols related to interstate movement.
- c) Social distancing

Q10) What are the factors that have affected the completion of construction project in oil and gas sector?

- a) Limited availability of resources.
- b) Shortage in number of labours
- c) Cost and budget
- d) Transportation

Q11) What are the ways by which issues related to delay in construction project can be resolved?

- a) Proper planning and execution
- b) Adequate availability of resources
- c) Ample number of working labour force
- d) Appropriate funds

Q12) According to you who played the major role after lockdown?

- a) Constructor
- b) Labourers
- c) Suppliers
- d) Owner

Q13) How technological assistance helped construction companies in executing their activities?

- a) Worked as a skeleton crew
- b) Managing budgets
- c) Reduced the duration of work in progress

Q14) How COVID-19 has put any impact on the efficiency of the workers?

- a) Increased
- b) Decreased

- Q15) Mention the causes of decrement in the efficiency of workers?
- Decrease in the income.
 - Fear of losing their jobs.
 - Health and safety concern
- Q16) Does construction business faced any financial crisis?
- Yes
 - No
- Q17) After COVID-19 what are the fear that are being faced by the workers?
- Problems related to health and safety
 - Working conditions
 -
- Q18) What are the reasons organisational efficiency?
- Decrease in the concentration of employees
 - Changes in norms and regulation
 - No proper supply chain
- Q19) By the end of 2020, do you see any engagement of workers in the construction workplace?
- Yes
 - No
- Q20) According to you, does the net profit of construction companies in the starting of 2021 has increased as compared to 2020?
- Yes
 - No
- Q21) As per your concern, it is important that construction companies keep a backup plan for such pandemic situation?
- Yes
 - No
- Q22) What are the strategies that a construction company must adopt for better performance?
- Conducting proper training and development sessions
 - Knowing about the requirements of customers.
 - Setting up Google service assistance
 - All of the above
- Q23) What is the overall impact of Ciovid-19 on the construction line of oil and gas sector?
- Decline in profits
 - Decline in the number of employees

- c) Setting up Google service assistance
- d) All of the above

Q24) According to you, what should a construction company do for their sustainability and growth at competitive marketplace?

Q25) According to you, what kind of suggestions you want to give to the construction company so that they can be future ready?


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APPROVAL PAGE

TITLE OF PROJECT PAPER: **FACTORS AFFECTING CONSTRUCTION
PROJECT COMPLETION ON TIME IN OIL
AND GAS SECTOR IN KERTEH,
TERENGGANU DURING COVID-19 PANDEMIC**

NAME OF AUTHOR: **NAZMAN IDRIS BIN MOHD AMAN**

The undersigned certify that the above candidate has fulfilled the condition of the project paper prepared in partial fulfillment for the degree of Master of Business Administration.

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