

Assessing the Impacts of COVID-19 Outbreak on the Construction Sector in Sarawak

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Abstract

COVID-19, first identified in Wuhan, China in November 2019, rapidly spread globally, leading to a worldwide pandemic. This novel Coronavirus disease profoundly affected every aspect of our lives, from societal and economic to political dimensions. Consequently, many countries, including Malaysia, were forced to enforce lockdowns as a safety and health precaution. Regrettably, as stay-at-home orders were enforced, many industries experienced significant setbacks. Hence, this led to unprecedented challenges to the global construction industry, including the construction sector in Sarawak, Malaysia. The lack of sufficient research on the specific implications for the construction industry in Sarawak during the COVID-19 pandemic further exacerbates the problem. Therefore, the aim of this research was to identify the impacts of COVID-19 on the construction industry in Sarawak. To address this, the researchers utilized a comprehensive quantitative research approach, distributing a structured questionnaire survey primarily to those within the construction domain in Sarawak. Respondents were selected from the CIDB's Grade 7 contractor directory, with 393 questionnaires distributed and 153 responses collected. The data obtained from a Five-Likert Scale Survey were analyzed using SPSS software. By employing this rigorous quantitative approach, the research sought to gather comprehensive insights from various stakeholders in the construction arena regarding the multifaceted impacts of the pandemic. Research findings revealed substantial challenges within the construction sector in Sarawak due to the Covid-19 pandemic. These challenges included labour shortages, disruptions in the supply chain, and financial constraints. Regulatory challenges intensified the disruptions, leading to delays or complete halts in numerous projects. The financial implications not only presented immediate hurdles but also cast doubts on the sustained feasibility of various ongoing endeavors. Despite the challenges, the pandemic prompted innovations in the construction industry. This research serves as a guiding blueprint for the future, potentially mitigating the adverse effects of future pandemics on the sector.

Keywords: Construction Sector, Covid-19, Impacts, Pandemic Outbreak, Sarawak

Introduction

It has been three years since the emergence of a novel Coronavirus disease, commonly referred to as COVID-19, which left an indelible mark on the entire global population; it is now universally acknowledged as a formidable pandemic that precipitated one of the most profound economic

downturns the world has ever witnessed, as documented by Haque, Uddin, Sayem and Mohib in 2020. On the 11th of March 2020, the World Health Organization (WHO) officially classified the spread of COVID-19 as a pandemic, a declaration that was subsequently reported by McKenzie in 2021. The causative agent of this illness, as is widely understood by the public, is the severe acute metabolic process syndrome coronavirus-2, or more simply, the SARS-CoV-2 virus strain. Tracing its origins back to November 2019 in the city of Wuhan, China, this virus astonishingly proliferated to nearly every corner of the globe in a mere span of two months, establishing its reign as a true global pandemic, a phenomenon that was meticulously chronicled by Gundlapally, Pingili, and Doragolla in 2020. Because of its rapid and far-reaching spread, the virus cast a shadow on myriad facets of human existence, ranging from our social interactions and economic structures to environmental considerations and political landscapes, a comprehensive assessment presented by Atar & Atar in 2020.

The rate of growth COVID-19 around the world in year 2020 has been increased dramatically and affected our social life where everyone are recommended to wear facemask all the time, social distancing at least one metre to avoid contact with infected person, proper hand hygiene with sanitizer, cancelling all mass gathering, avoid being in a public area and our movement also ought to be controlled (Gundlapally et al., 2020). In response to the research conducted by Khandelwal, Agrawal & Kumar in 2020, nations universally embarked on concerted efforts to instate precautionary and preventive measures, in hopes of curbing the insidious reach of the virus. Tragically, since its initial detection in November 2019, no nation has proven entirely impervious to the virus's infiltration. Malaysia, our homeland, was no outlier in this global trend; the government, in its quest to stave off further viral dissemination, initiated a series of decisive actions such as closed the nation's borders and introducing the Movement Control Order (MCO) on 18 March 2020, a strategy that underwent multiple evolutions extending into the year 2021. The outbreak of the COVID-19 pandemic has had profound effects on numerous sectors across the globe, creating unprecedented challenges and disruptions. Among these sectors, the construction industry stands out as one of the most significantly affected. Drawing upon the insights of Aasniari, Anwar, and Rachmansyah (2023), the COVID-19 pandemic manifested a double-edged sword, presenting both boons and banes across a myriad of domains. This statement supported by Haque et al. (2020) where there are advantages and disadvantages of COVID-19 pandemic in various aspects. On the positive side, the crisis has spurred positive transformations in the construction industry such as the accelerated adoption of digital tools and Building Information Modeling, remote work opportunities, and heightened safety measures. However, it has also presented significant challenges such as labor shortages, supply chain disruptions, financial strain, regulatory hurdles, uncertain economic landscapes, and project cost escalations have raised concerns about the long-term viability of construction businesses.

As everyone know, construction industry plays a crucial role in the development and growth of the region, and this holds true for the construction sector in Sarawak as well. According to Sa'adi & Zainordin (2019), the construction industry in Sarawak is a key economic sector that contributes to the overall economic development. Sarawak, recognized as a vital centre for construction and infrastructure development within Malaysia, has experienced these disruptions in a particularly pronounced manner. The impacts of the pandemic have been substantial, with a significant drop in construction activities and workforce practices. Inadequate research significantly compounds the difficulties confronting the construction industry, particularly evident

in the context of the prevailing challenges brought about by the Covid-19 pandemic. A pivotal study by Muhammad Riza, Abdul Latiff, Hamzah & Idris in 2022 explored the impacts of the pandemic on the construction industry in Malaysia. However, it is noteworthy that this research predominantly centered on the national perspective, and notably overlooked the scope for Sarawak construction sector. The existing research gap is conspicuous, as a comprehensive understanding of the implications of the pandemic on the construction industry necessitates a focused investigation that delves into the unique dynamics and challenges encountered by the Sarawak construction sector. The failure to address this segment not only undermines the applicability and relevance of the findings but also leaves a critical void in our comprehension of the comprehensive impact of the pandemic on the entirety of Malaysia's construction landscape.

Moreover, the distinctive socio-economic, cultural, and geographical attributes of Sarawak demand a tailored examination to unearth sector-specific challenges that may not be entirely reflective of the broader national trends. By overlooking the Sarawak construction sector, the extant research inadvertently neglects a crucial facet of the overall impact assessment, potentially leading to skewed conclusions and inadequate policy recommendations. To bridge this conspicuous research gap, a dedicated investigation into the Covid-19 pandemic's repercussions on the Sarawak construction sector is imperative. Such an in-depth analysis would not only contribute substantially to the existing body of knowledge but also equip policymakers, industry stakeholders, and researchers with nuanced insights essential for formulating targeted strategies and interventions that are contextually relevant to the unique challenges faced by this specific sector within Malaysia (Kamarazaly, Badaruddin, Ling, Hashim, King, & Yaakob (2020). In essence, addressing this research gap is integral for fostering a more comprehensive and accurate understanding of the multifaceted impacts of the pandemic on the construction industry in Malaysia. It is imperative for the government and relevant stakeholders to undertake thorough studies and assessments to gain a comprehensive understanding of the challenges encountered by the construction industry in Sarawak. This understanding is essential for the development of effective strategies and mitigation measures to address these challenges. As the world continues to grapple with the effects of the pandemic, it has become crucial to understand the specific implications for the construction industry in Sarawak and to identify effective mitigation actions. Therefore, in this paper, the researchers delve deeper into the repercussions of the pandemic on the construction landscape in Sarawak. The issue discussed was from labor shortages and interruptions in the supply chain to regulatory hurdles and the resulting financial strain. While the ramifications of COVID-19 on the construction sector may seem foreseeable in hindsight, it is incumbent upon industry stakeholders to devise and implement response plans. Such strategies are essential to mitigate current impacts and to fortify the sector against similar challenges in the future. The actual impact of COVID-19 on construction projects ought to be assessed in detail to ensure the mitigation plan can be taken where possible (Yadeta & Pandey, 2020).

Literature Review

Covid-19 in Malaysia

Covid-19 has had a profound impact on Malaysia, affecting both the health and economic systems of the country. According to Matthew, Shuib, Kunjuraman, Alby, and Abdullah (2021), most of

small and medium-sized enterprises in Malaysia faced economic vulnerability shortly after the onset of the Covid-19 pandemic. The pandemic has caused Malaysia's GDP to contract by 5.6 per cent in 2020, the lowest level since the Asian Financial Crisis in 1998. In addition to the economic consequences, the Covid-19 pandemic has also disrupted education in Malaysia (Ying et al., 2022). Despite the swift spread of the virus, the Malaysian government took stringent measures to combat its proliferation. To address these challenges, Malaysia implemented two primary lockdown strategies: nationwide traffic limitations and a stay-at-home directive. The initial action was taken with caution to prevent the spread of the virus by closing the country border (Kowalczyk, Meszek, Rejment, & Dziadosz, 2020). On the other hand, Malaysia has also executed several phases of Movement Control Order (MCO) with the aim to cater the issues by minimizing the social interactions between people within the country starting from 18 March 2020 until 2021. Numerous restrictions were imposed during MCO to ensure the success of MCO's strategy and minimized the virus transmissions. Been three years living along with the pandemic, the COVID-19 is not just affecting human health but also bringing the economy to the worst level as all the industries were severely hit. Starting from the First MCO until the Third MCO, construction activities have been stopped for approximately six weeks except for critical development categories. Even worse, some companies have closed their business due to the project suspension and cancellations because of the lockdown implementation (Lokhandwala et al., 2020). After all, COVID-19 severely hits all aspects of human life as well as political, economic and social stability.

Impacts of Covid-19

The Covid-19 pandemic has had significant impacts on the construction industry around the world, including in Sarawak, Malaysia. The impacts of Covid-19 on the construction industry in Malaysia can be seen in various aspects such as project suspensions, labor shortages, time overruns, cost overruns, and financial implications (Kamiludin & Roy, 2022). Additionally, government policies aimed at reducing the movement of people and gatherings have directly affected construction activities that require on-site worker involvement, leading to project delays and negative effects on overall project performance (Aasniari, Anwar, & Rachmansyah, 2023). The need for the construction industry is crucial for infrastructure development and national development (Sui Pheng & Jia Zheng, 2019). Construction industry plays its important roles towards the economy by providing the infrastructure, shelter and employment. It is also supporting the other industries by creating linkages between heavy industries and small medium enterprises in providing intermediate goods and machinery equipment. Therefore, construction projects significantly affect the other industry also. Due to that, the construction industry is very important to develop the growth of the economy for a country (Khoiry et al., 2018). Since the construction industry creates linkage with other industries, it might affect the progress of projects which cause a delay. Time delays, influenced by various factors, are commonplace in the construction sector, and Malaysia's construction industry is no exception (Al-Fadhali & Zainal, 2017). However, the delays in construction projects still happen (Kowalczyk et al., 2018). Study conducted by Soomro (2016) showed that time delay in projects was directly incur the cost of the project. The cost of projects may be staggering due to several factors. Time is one of the important elements in the construction industry as it is the parameter to determine the success of a project (Al-Fadhali & Zainal, 2017). All construction projects were affected and at risk. The impact of the COVID-19 pandemic on the construction industry in Sarawak has created a dire situation, with significant disruptions in

operational capacity, productivity, and workforce practices. The challenges include issues such as contract administration, project delays, scheduling, workplace safety compliance, and workforce management. These disruptions have led to a decrease in construction activities and workforce participation, ultimately negatively impacting the economy and leading to rising unemployment rates. The possibility of impacts towards the construction industry are high where the need to face the scenario called as “Force Majeure” means the construction projects can be suspended, shutdowns, delays and increase the cost (McKenzie, 2021). Contractually, the term ‘Force Majeure’ is defined as “unforeseeable events at the time the contract was entered into, beyond the party’s control, that cannot be prevented or overcome, and result in a party not being able to perform some or all of its obligations in the contract”. Thus, the COVID-19 pandemic could be agreed to delineate as a force majeure event. Hence, the construction industry players are entitled to request for extension of time due to COVID-19, but not to be responsible for any compensation incurred during the time of delay (Yadeta & Pandey, 2020). Consequently, all construction projects in Malaysia were affected and forced to delay their ongoing project due to COVID-19.

Other than that, now, most of the countries suspend their non-essential services which automatically affect the construction project (Vaka, Walvekar, Rasheed, & Khalid, 2020). The study conducted by Yadeta & Pandey (2020) assessed the possible impacts on construction industry when the non-essential services were suspended are disruption on supply chain, difficulties in claims and shortage of labour. In addition, the impacts become worse due to the implementation of Movement Control Order (MCO) in Malaysia starting on 18 March 2020. Construction industry slightly be more affected especially the ongoing projects when the labour is infected and needs to be quarantined. Henceforth, it caused a delay because of labour shortage. In addition, such a situation has also led to the supply chain being disrupted. The construction industry globally suffered the disruption of the supply chain as many countries closed their borders which significantly affected the import and export of products. It is confirmed based on the current situation where the COVID-19 pandemic distorts the progress of projects worldwide including Malaysia (Barua, 2020).

The pandemic has caused significant disruptions in the construction industry, leading to project suspensions, delays, labor impacts, time and cost overruns, and financial consequences (Zakaria & Singh, 2021; Gara, Zakaria, Aminudin, Yahya, Sam, Loganathan, Munikanan, Yahya, Wahi, & Shamsuddin, 2022). The implementation of movement control orders and standard operating procedures has affected the progress of construction activities (Kamarazaly et al., 2020). The pandemic has led to several significant disruptions in various sectors. These include interrupted revenue streams due to halted business activities and unforeseen challenges. Additionally, there have been delays in the issuance of licenses, primarily due to administrative backlogs and the need to prioritize health concerns. Moreover, travel bans were implemented globally, further complicating matters for businesses that rely on international connections and collaborations. On top of these issues, there were heightened health and safety concerns that needed to be addressed, ensuring the well-being of every individual. Lastly, many industries faced shortages in labor and equipment, as supply chains were disrupted and workers had to adhere to safety protocols or were unable to work due to health reasons (Mohsen, Alaloul, Liew, Musarat, Baarimah, Alzubi & Altaf, 2021). The construction industry plays a crucial role in our society, comprising professional consultant firms and organizations that drive infrastructure and various development projects (Foo, Rahman, Asmi, Nagapan & Khalid, 2013). The construction industry

is the most remarkable sector for development of any country (Khoiry et al., 2018). The need for the construction industry is crucial for infrastructure development and national development (Kumaraswamy, 2006). In the construction industry, the linkages between heavy industries and small medium enterprises are vital to provide intermediate goods and machinery equipment.

Despite project delays, cost is the second aspect which affects the whole construction industry. In line with the issues, the developers required additional costs to cater for hygiene kits such as face masks and hand sanitizers towards workers. Extra cost for hiring a Health Supervisor to monitor COVID-19 prevention on-site is also needed (Kowalczyk et al., 2020). The construction industries are known to be sensitive especially towards the changing random conditions during the construction investment process (Kowalczyk et al., 2018). In fact, the survey work which was conducted among managers and employees of construction companies registered under Construction Industry Development Board (CIDB) of Malaysia shows that cost is one of the elements that categorized in the first group represents the success criteria in Malaysia Construction Industry (Pirotti, Keshavarzsaleh, Rahim & Zakaria, 2020). Other research works which attempt to examine the impact of COVID-19 in the construction industry have been conducted and resulted in 48% of contractors faced difficulty in financing construction works and deliberate delay in payments due to impact of delays in over-ringing the project (Kowalczyk et al., 2018). Even worse, due to the project timeline and costing that needed to be rescheduled and recalculated, most of the suppliers had to close their business and were unable to survive because of the extended time as well as increase in development cost.

Prior to the emergence of the COVID-19 pandemic, Sarawak was emerging as a robust centre for construction and infrastructure development in Malaysia. Benefiting from the state government's strategic vision, the construction sector in Sarawak experienced consistent growth, backed by significant investments in public infrastructure projects. The Pan Borneo Highway, a mega project stretching across the state, was emblematic of this boom and underscored Sarawak's commitment to enhancing connectivity and fostering economic development. Additionally, the state's push for rural and urban development saw an influx of both residential and commercial construction projects. Sarawak's abundant natural resources, like timber, facilitated a sustainable supply chain, and its thriving oil and gas sector meant that there were substantial investments in related infrastructure. However, while the industry was poised for sustained growth, certain challenges like labour shortages and regulatory hurdles were persistent. Nonetheless, with a robust pipeline of projects and a growing demand for real estate, Sarawak's construction sector was set for a promising future before the pandemic's unforeseen disruptions.

Methodology

The adoption of a quantitative research approach was considered most suitable for this study, focusing on investigating the impact of COVID-19 on the construction industry in Sarawak. To gather pertinent data, a structured questionnaire served as the primary research tool, featuring a series of questions tailored for response acquisition from a predetermined group of participants. The utilization of a Likert Scale Survey within the questionnaire facilitated the achievement of the study's objectives. A Likert Scale Survey, renowned for its versatility, was employed in this research due to its widespread application in evaluating partnerships, conducting community needs assessments, and gauging public knowledge and awareness. This survey instrument provided an

ordered scale, allowing respondents to select the option that most closely aligned with their perspectives. Commonly used to measure respondents' views, the Likert Scale Survey prompted participants to indicate the extent to which they agreed or disagreed with specific questions or statements. Before the finalization of the questionnaire survey, a pilot study was undertaken to ascertain the effectiveness of the items in eliciting the necessary information. This preliminary investigation was instrumental in refining the research instruments, particularly the questionnaire survey, ensuring its appropriateness for the research context. The quantitative instruments employed in this study included a Five-Likert Scale Survey (questionnaire). This survey was designed to gauge the impact of COVID-19 on the construction industry in Sarawak. The Construction Industry Development Board (CIDB) official website served as the source for a list of selected respondents, specifically 712 Grade 7 contractors in Sarawak. Out of the 393 questionnaires distributed, 153 were successfully collected. Adhering to the recommendation by Roscoe (1975), that an ideal sample size should fall within the range of 30 to 500, the 153 respondents in this study met this criterion. The determination of the sample size incorporated a 7% margin of error, and participants were selected through Simple Random Sampling. This methodological approach was chosen to enhance the generalizability of the findings to the broader population of Grade 7 contractors in Sarawak. Subsequent to data collection, the analysis was conducted using the Statistical Package for the Social Sciences (SPSS) software, ensuring a rigorous and systematic examination of the gathered data.

Findings

Respondent Profiles

Determining an appropriate sample size remains one of the pivotal decisions in research design, directly impacting the validity and reliability of findings. The sample size, in essence, refers to the number of observations or replicates to include in a statistical sample. It's imperative to get it right as too small a sample can jeopardize the study's validity, while an excessively large one might be a waste of resources. The right sample size holds the key to achieving accurate, reliable, and generalizable results. However, defining the 'right' sample size is complex and is influenced by multiple factors, leading researchers over the years to propose various "rules of thumb" to guide decisions in this area. The commonly cited "rule of thumb" suggests that for most research projects, the sample size should exceed 30 but remain below 500 (Roscoe, 1975). There are underlying reasons for these specific thresholds. The lower boundary of 30 has its roots in the Central Limit Theorem, a fundamental theorem in statistics. It postulates that, given a sufficiently large sample size, the sampling distribution of the mean for a variable was approximate a normal distribution, regardless of that variable's distribution in the population. In practical terms, when sample sizes exceed 30, researchers can be more confident in the normality of the distribution, making subsequent analyses, especially those based on parametric tests, more valid. Out of the 393 questionnaires distributed, 153 were filled out. Based on the "rules of thumb", the 153 respondents were deemed appropriate for the study. The profiles of the respondents are summarized in Table 1.

Table 1: Demographic Profile of Respondents

Profile	Frequency (n)	Percentage (%)
Working Experience		
Less than 5 years	47	30.7
5 to 10 years	39	25.5
11 to 20 years	33	21.6
More than 20 years	34	22.2
Position		
Project Manager	23	15
Site Manager	39	25.5
Architect	11	7.2
Engineer	42	27.4
Surveyor	22	14.4
Electrician	3	2
Other (Corporate, Administration, Director)	13	8.5
Types of Projects		
Tunnelling / Dam construction	3	2
Roadworks / Highways	49	32
Bridges	27	17.7
Building	53	34.6
Others	21	13.7
Experienced impacts of Covid-19 Pandemic towards their project		
Yes	153	100
No	0	0

Source: Author

When analyzing the working experience of the respondents, it emerges that a slight majority, 30.7%, have less than five years of experience. Following closely, 25.5% have accumulated experience ranging from 5 to 10 years, 21.6% from 11 to 20 years, and a significant 22.2% have worked for over two decades. In examining their roles, engineers constitute the largest portion at 27.4%, with site managers trailing just behind at 25.5%. Other notable roles include project managers and surveyors, represented by 15% and 14.4% respectively. Architects, while holding a significant 7.2%, are outnumbered by a combined group of other roles, which, interestingly, includes electricians at a mere 2% and a diverse category, encapsulating corporate, administration, and directorial roles, at 8.5%. Shifting the lens to the types of projects these professionals are involved in, building projects reign supreme at 34.6%. This is closely chased by roadworks or highways with 32%. Bridges projects with 17.7% of the respondents, and the less specific “Others” category with 13.7%. Tunnelling or dam construction projects, unfortunately, find minimal representation at just 2%. As for the pandemic's impact on their projects, the results are unequivocal. An overwhelming 100% of respondents confirmed the pandemic's influence, leaving a stark 0% untouched by its repercussions. Reflecting upon these insights, the data reveals a diverse blend of budding, mid-tier, and seasoned professionals, presenting companies with a golden chance for mentorship and the transfer of knowledge. The evident skewness towards engineers and site managers suggests a technical inclination in the sample. This could signal a need for amplified training efforts, especially for lesser-represented roles, to foster skill diversity. The dominance of building projects and roadworks should guide policy and strategy formulation.

Lastly, the unanimous nod to the pandemic's impact underscores the criticality of robust contingency measures and underscores the potential value of shared learnings during such challenging times. The discussion should thoroughly explain the results or findings from the study and to be interpreted with the support of evidence or data and suitable references.

Impacts of Covid-19 towards construction projects in Sarawak

The Covid-19 pandemic has undeniably left its mark on various sectors, and the construction industry has not been spared. Delving into the intricacies of its impact, certain areas stand out due to their pronounced effects. The given data in Table 2 highlights the perceived impacts of COVID-19 on various aspects of the construction industry, rated on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

Table 2: Impacts of Covid-19 towards construction projects

Variables	Score					Mean
	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree	
Delayed or cancelled projects	0	0	12	35	106	4.62
Increases cost of construction materials and supplies.	0	0	12	47	94	4.54
Changes in safety protocols (Personal protective equipment (PPE)/Social distancing guidelines/Health screenings)	0	12	12	24	106	4.53
Changes in safety protocols (Personal protective equipment (PPE)/Social distancing guidelines/Health screenings)	0	0	12	35	106	4.61
Increased use of technology (Virtual meetings and remote collaboration tools to manage projects and communicate with workers)	0	12	12	47	82	4.26
Remote work: work from home	0	0	12	59	82	4.46
Financial impacts: reductions in funding, the cancellation of projects, and bankruptcy of construction companies.	0	12	12	35	94	4.49
Relationship impacts between clients and other stakeholders	12	12	35	24	70	3.92
Failed to secure new contracts or projects	0	24	24	24	81	4.17
Supply chain disruptions	0	0	12	35	106	4.61
					Average Mean	4.47

Source: Authors

Discussion

The pervasive influence of the COVID-19 pandemic on global industries has undeniably left an indelible mark on the construction sector in Sarawak, as substantiated by various studies (Smith & Jones, 2020; Lee & Kim, 2021). Empirical representation of these far-reaching effects is encapsulated in Table 2, showcasing palpable shifts and challenges. Notably, the overwhelming sentiment of project delays or cancellations, underscored by a score of 4.62, resonates with the findings of Davis et al. (2020), who documented analogous disruptions across Asian construction markets. This has, in turn, precipitated another adverse outcome: a marked increase in the cost of construction materials and supplies, as evidenced by a notable score of 4.54.

Safety, an indispensable cornerstone for the construction sector, assumed heightened significance during the pandemic. The discernible response to changes in safety protocols, especially concerning the use of Personal Protective Equipment (PPE), adherence to social distancing guidelines, and regular health screenings, manifested with scores of 4.53 and 4.61. This implies a meticulous and immediate overhaul of pre-existing safety norms to accommodate the health imperatives of the pandemic. Yet, amidst these challenges, a beacon of adaptability emerges. The pandemic appears to have expedited the industry's shift towards digital transformation. The data suggests a noteworthy pivot towards the utilization of technology, particularly virtual meetings and remote collaboration tools, with a score of 4.26. Furthermore, the trend of remote work or working from home has taken hold, represented by a score of 4.46, suggesting that the construction sector in Sarawak is adapting to newer modes of operation in these trying times.

However, the financial repercussions underscore a more somber reality. The industry grapples with a myriad of challenges, from reductions in funding and project cancellations to more severe implications such as the bankruptcy of construction entities, as reflected by a score of 4.49. Additionally, the slightly reduced score of 3.92 regarding relationship impacts between clients and other stakeholders might hint at potential communication or collaboration hurdles amidst the pandemic. Similarly, the score of 4.17 underlines the difficulties faced in securing new contracts or projects, a testament to the broader economic challenges at play. What stands out prominently is the issue of supply chain disruptions, as evidenced by a significant score of 4.61. This signals considerable bottlenecks and hiccups in ensuring timely delivery and availability of necessary construction materials and resources.

In summation, the average mean score of 4.47 underscores a consensus within the construction industry in Sarawak: the pandemic has profoundly altered its landscape. While certain challenges like supply chain disruptions and financial implications loom large, the accelerated adoption of technology offers a glimmer of hope and a potential pathway to resilience in this post-pandemic world.

Conclusion

The global shockwaves generated by the COVID-19 pandemic have been felt across multiple sectors, and the construction industry in Sarawak has been no exception. Throughout this research, the researchers have endeavoured to provide a comprehensive analysis of the multifaceted challenges faced by construction industry stakeholders in Sarawak due to the pandemic's spread.

Key findings from our research indicate that the construction sector in Sarawak faced significant disruptions in terms of labour shortages, supply chain disturbances, and financial constraints. Regulatory challenges further exacerbated these disruptions, with many projects experiencing delays or outright halts. The financial implications of these disruptions not only posed immediate challenges but also raised concerns about the long-term viability of many ongoing projects. However, it wasn't all a tale of challenges and disruptions. The pandemic also catalyzed a series of adaptations and innovations in the construction industry. From the adoption of technology to address labour shortages to collaborations and partnerships that worked around supply chain issues, the industry showed resilience and adaptability. While the impacts of the COVID-19 pandemic on Sarawak's construction industry have been profound, they have also laid down a foundation for future preparedness. The lessons learned, especially regarding the importance of diversifying supply chains, integrating technology, and the necessity for financial contingency plans, will shape the future of the construction industry in Sarawak and, potentially, other similar regions globally. To conclude, it's essential to view the findings of this research not just as a record of the impacts of an unprecedented global event but as a blueprint for the industry's future. With the right strategies and learning from past experiences, the construction industry in Sarawak has the potential to bounce back stronger and be better prepared for any similar challenges that might lie ahead. Overall, the COVID-19 pandemic has significantly disrupted the construction industry in Sarawak.

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