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Salami, BA and Ajayi, SO and Oyegoke, AS (2021) Tackling the Impacts of Covid-19 on Construction Projects: An Exploration of Contractual Dispute Avoidance Measures Adopted by Construction Firms. The International Journal of Construction Management. ISSN 1562-3599 DOI: <https://doi.org/10.1080/15623599.2021.1963561>

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To cite this article: Babatunde A. Salami, Saheed O. Ajayi & Adekunle S. Oyegoke (2021): Tackling the impacts of Covid-19 on construction projects: an exploration of contractual dispute avoidance measures adopted by construction firms, International Journal of Construction Management, DOI: [10.1080/15623599.2021.1963561](https://doi.org/10.1080/15623599.2021.1963561)

To link to this article: <https://doi.org/10.1080/15623599.2021.1963561>



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Published online: 11 Aug 2021.



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Tackling the impacts of Covid-19 on construction projects: an exploration of contractual dispute avoidance measures adopted by construction firms

Babatunde A. Salami^a, Saheed O. Ajayi^b and Adekunle S. Oyegoke^b

^aCenter for Engineering Research, Research Institute, King Fahd University of Petroleum & Minerals (KFUPM), Dhahran, Saudi Arabia; ^bSchool of Built Environment, Engineering and Computing, Leeds Beckett University, Leeds, UK

ABSTRACT

This study explores the measures that construction businesses are putting in place to mitigate the risks of litigation associated with potential contract breaches due to COVID-19. Field study and survey research was used to accumulate data for the preliminary study phase, whose results were used in the construction of the research questionnaire to elicit responses for the qualitative study phase. Using descriptive statistics, exploratory factor analysis and reliability analysis, data from the quantitative research study phase was analysed to reveal the top and underlying strategies adopted by the construction firms in avoiding contractual disputes. These adopted strategies include maintaining good relationship with contractual partners, quick report of any potential for dispute, collaboration with contractual parties for goodwill, early decision on site closure and studying of contractual terms for notice period information. Following the discussion on the underlying measures, the top-rated adopted strategies were identified and discussed in the paper. This study provides an opportunity to learn from the measures adopted by construction firms in avoiding contractual disputes precipitated by the Covid-19 pandemic. This will aid the companies in minimizing risks, reduce spending and uncertainties in order to focus attention on maintaining existing contractual relationships to secure future businesses.

KEYWORDS

Covid-19; coronavirus; contract; disputes; dispute avoidance; construction; pandemic; project; collaboration; relationship

Introduction

Approximately 7 billion people worldwide are at severe risk of Covid-19 infection, with an infected population of approximately 1.3 million people and more than 70,000 deaths as at April 2020 (WHO 2020a). The emergence of Covid-19 and the rate at which it spreads across different continents raised serious international public health concerns. No country is safe from the pandemic since its outbreak as the world experiences unprecedented infection with global confirmed cases growing rapidly. The first cases of coronavirus (Covid-19) was reported at the World Health Organization (WHO), China country office on the 31st day of December 2019 according to the first situation report on Covid-19 (referred to as Novel coronavirus 2019-nCoV before the name was finalized) (WHO 2020b). The confirmed cases grew further at an alarming level of spread and severity globally to 87,137 after exactly one month (WHO 2020c). On the 11th day of March 2020, the cases grew further to 118,319 leaving the WHO no other choice than to declare Covid-19 a pandemic (WHO 2020d). In response to the March 2020 declaration by the WHO, governments around the world imposed a lot of first-time measures. These include but not limited to measure to implement social distancing, ban travel, restrict movement of persons and finally a total lockdown where all are expected to stay home. The Covid-19 had a devastating effect on the world, putting its activities to a halt. As different countries struggle to keep the outbreak in check, several industries have paid heavily as a result of the fallout from shared disruption.

There are recent studies related to Covid 19 on construction. Simpoh and Amoah (2021) identified three categories of measures to curb the spread of COVID-19 among construction site workers, which are: screening, site access and handling of material and equipment deliveries on-site. Osunsanmi et al. (2020) suggested that there is a high prospect for developing smart buildings as a preventive mechanism against coronavirus. The construction industry is no different as many projects currently under construction are affected in a number of ways, for instance, a shortage of building materials including roofing materials and timber in the UK (Marshall 2021). In addition, measure taken to contain the virus such as quarantine, self-isolation and restrictions on human and vehicular movements have far-reaching effect on the ability of contractors to finish the project on time and within budget (Alsharef et al. 2021). The terms of the related contracts need to be carefully evaluated in order to assess if these considerations can impact both the timings and expense of projects currently under construction and in the planning stage (Osborne 2020). The construction industry is no stranger to risks, from inadequate labour and escalating tariffs to governmental change, Covid-19 is another one big factor poised to affect construction companies. Companies have devised some means like working weekends only when the site is usually empty while some other have used other strategy like working from home. The goal of this study is to explore the proactive measures that construction businesses are putting in place to mitigate the risks of litigation associated with potential contract breaches due to Covid-19 pandemic and its impacts on construction business operations. The study, therefore, fulfils its

CONTACT Saheed O. Ajayi  arcileogbo@outlook.com; S.Ajayi@leedsbeckett.ac.uk

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goal by establishing the top-ranked and underlying dispute and litigation avoidance measures that were implemented as the pandemic ravages the world. There are numerous surveys done by different organizations about the general impact of covid-19 on construction business. CHAS (2021) survey results indicate that over 70% of businesses experienced a decrease in turnover, almost 70% of respondents had to cease operations during the pandemic and 80% of businesses cancelled or postponed projects. About 52% changed their approach to procurement and many goods and services were unavailable during the pandemic. All these changes have direct impact on construction time and project cost. The contractual implication of these changes due to the pandemic and the cumulative effects on the process especially time delay, extra expenses and contractual provision of force majeure is examined in this paper. In the absence of grounded research studies on Covid-19 pandemic impacts on the construction industry in this specific area, field studies were conducted, similar studies and company blueprints were reviewed for construction related preparatory, contractual and dispute avoidance measures against Covid-19. These garnered measures were used in developing the content of the questionnaire survey in order to provide the required ground for comprehensive generalizability. To understand the different levels of impact all the identified measures have on the coronavirus pandemic, descriptive statistics and exploratory factor analysis were used.

Covid-19 and force majeure claims - implication of standard forms of contract

In construction contracts, *force majeure* as used in US common and civil law refers to a provision in the contract that relieves a party of its contractual obligations if the occurrence of natural or unavoidable circumstances hinders the contract performance. This legal concept exists in many civil law jurisdictions across the world, which is related to a physical forfeiture or personal damage (Akbiyikli et al. 2011; Fawzy and El-Adaway 2012). *Force majeure* events are exceptional events outside the parties' control, which impedes the execution of construction contracts either physically or legally. This is in opposition to mere difficulties, time consumption or incurred expenses experienced in the execution of construction contracts (Kingston 2014). Though an important provision in construction contracts, *force majeure* is not a generally recognized doctrine in common law with unclear meaning. This is because its recognition is dependent on a specific provision in the contracts where what *force majeure* event is clearly and properly defined (Kingston 2014). This paper align with the definition of force majeure in subclause 19.1 of the 1999 FIDIC red book (Conditions of Contract for Construction, for Building and Engineering Works), where *force majeure* was defined as an exceptional event or circumstance which is beyond a Party's control, and which is not substantially attributable to the other Party (FIDIC 2020).

Since the outbreak of coronavirus pandemic, a lot of discussions have been generated on whether *force majeure* clause offers justification for Covid-19 as being an unforeseeable event outside the purview of the contractor or not. While the discussions continue, important factors that need to be well-thought-out in deciding whether Covid-19 impacts qualify as *force majeure* or not, include; (a) whether the language used in wording the *force majeure* clause clearly mentioned the pandemic as beyond parties' control, (b) whether the unforeseeability of *force majeure* event was defensible; and (c) whether underperformance or non-performance can be attributed to the *force majeure* event. In an

event of *force majeure* declaration, a non-exhaustive list of eligible events is provided in subclause 19.1 of the FIDIC form of contract.

Bearing in mind the contractual language, Covid-19 pandemic would fit within the clause if there is a specific mention of events such as "disease outbreak", "epidemic" or "pandemic". However, if the clause limits the *force majeure* to be exclusively some events like earthquakes and storms, proving Covid-19 is intended by the clause will be contestable (Shaughnessy et al. 2020). In the absence of specific contractual provisions or clause and the extent to which dealing parties handle unforeseeable events, no *force majeure* will be implied. Under the common law, there is no established meaning of *force majeure*, so every *force majeure* clause turns on the specific contractual clause used for definitions (Glover 2020).

The JCT (DB) (2016), surprisingly failed to attempt a definition of *force majeure*, while the interpretation of *force majeure* is largely dependent on the legal phraseology of the contract between parties. The experienced delay due to Covid-19 pandemic may give rise to extension of time for the contract, however, will not result in loss and expense. In the JCT (SBC/Q) (2016), the idea of "relevant events" (used in place of *force majeure*) was expressly referenced at clauses 2.26.14 (*force majeure* notification by service of a notice) and 8.11 (termination of contract due to *force majeure*).

Hence, *force majeure* is a relevant events and not a relevant matter in line with clause 2.26.14 (Miller 2020). *Force majeure* events are taken care of under clause 2.26.14, which when occurs will be a relevant event that entitles the contractor to a fair and reasonable extension of time. Since *force majeure* is used in reference to circumstances independent of the will of man and not in his control, it therefore seems clear that Covid-19 pandemic could be a relevant event. Clause 8.11 deals with the general cause of termination when events are out of the control of contracting parties occurs such as civil commotion, terrorism, governance intervention, etc. In the events of serious delay to contractual obligations, parties to the contract give intentional notice to terminate in line with clause 8.11. Priority to reduce the impacts of Covid-19 pandemic would be paramount amongst contractual parties, but the contractor is entitled to lost time (relevant events, clause 2.26) and loss and/or expenses (money) (relevant matters, clause 4.21) (Brown 2020). Such events are covered in (clause 2.26.1) and (clause 4.21.1) on full or partial restriction to construction site, postponing contractual obligations in clause 3.10, clause 2.26.2.2 and clause 4.21.2.1. it also includes delays in required statutory authority approval in clause 2.26.13 and relevant matter clause 4.21.4, and, impediments to the flow of work from employer or his representatives in clause 2.26.6 clause 4.21.5. Many scenarios are responsible for this specific event and a possible trigger is the Covid-19 pandemic, where many stop-work decisions are taken leading to extension of time and its loss and/or expense (Brown 2020).

In a JCT contract, it is imperative to use "Relevant event", being a technical and contractual term, in order to apply for extension to project completion. This would allow for recovery from incurred losses and expenses so the contractor can be shielded/protected from any potential damage that the client might levy (Heming 2020). Without notification on relevant events and relevant matters, it would be difficult to win a claim to extension of time or recover loss and/or expenses. In the JCT DB contract (2016), there are two separate notification clauses, clause 2.24 for the relevant events notifications and clause 4.20 for the relevant matters notification. Due to continuous

Table 1. Demography of the respondents.

	Sample size	% of Respondents
Profession/Job roles		
Director	5	5
Designer	16	15.8
Management	8	7.9
Planning	50	49.5
Craftsman	3	5
Technical roles	5	5
Others	14	13.9
TOTAL TOTAL	101	100
Size of Organization		
Fewer than 20 employees	18	17.8
21 to 100 employees	29	28.7
101 to 500 employees	16	15.8
501 to 1,000 employees	14	13.9
1,001 or more employees	24	23.8
Fewer than 20 employees	18	17.8
TOTAL TOTAL	101	100

notification clause amendments, it is imperative for contractors to read their contracts for notification requirements in order not to miss out on amended requirements. The procedure for notifying a relevant event (for instance *force majeure*), is that notice be given under clause 2.24.1 and should include, first, circumstantial details and delay cause, and second, state what relevant event is applicable based on the relevant events list in clause 2.26. Under clause 2.25.1, the client is obliged to give a “fair and reasonable” extension of time if a delay is caused by one of the relevant events.

Under the New Engineering Contract, or NEC Engineering and Construction Contract (NEC3/4), *force majeure* provisions is dealt with under clause 19.1, which includes (i) any matter that are beyond the control of the parties and (ii) events that stop the contractor from completing the works at all, or by the date shown on the accepted program (NEC 2020). In clause 60.1.9 of the NEC 3/4 contract, *force majeure* was described in every sense of the phrase except that the phrase was not used.

Covid-19 and supply chain issues

The construction industry was uncertain about supplies from suppliers as the pandemic spreads due to complications in accessing supplies leading to possible shutdown by suppliers. Some of these complications came into place as a result of issues associated with cleaning and sanitization of supplies (materials), and the absent workforce at the suppliers’ ends. This led to delivery failures or failure in keeping to material delivery schedules, which impacted heavily on the local supplies and projects. 50,000 construction workers were reportedly laid off in Hongkong, while another 80,000 workers had their working hours significantly reduced as contractors await the reopening of the supply chains in mainland China (GCR Staff 2020). For more than two decades, construction companies in the US for instance relied on China as supplier for all types of construction materials such as electrical and lighting supplies, elevators, plumbing fitting and fixtures, and HVAC equipment (Construction Drive 2021). As a result of stoppage of production lines in Mainland China due to workers’ quarantine program, shipping containers with materials are held up in China’s port and there was no transport for finished products from manufacturing factories. The halt in the supply chain potentially caused enormous delays in construction work and cost overruns on projects, in addition to increase in local demand for construction materials. While the unforeseeable nature of Covid-19

pandemic can pass without much debate, the party to carry the risks and losses from the delay and cost overruns will be dictated by the guiding written agreements between contracting parties. Again, the *force majeure* clause must be reviewed to determine if the pandemic can be a cogent reason for excusable delay and enough to extend the project time and acquit the contractor of any liable damage (Robinson+Cole’s Construction Group 2020).

Methodology

With many people in lockdown and restricted contact, a quantitative approach to data collection was deemed as the best approach for the investigation. First, qualitative measures were established through a number of different approaches, including the review of extant literature on how construction businesses mitigated the risk of litigation along with precautionary safety measures during previous pandemics such as Dengue disease, “Hong Kong Flu” pandemic and the Asian Flu, that ravaged the different parts of the world (Chowell et al. 2003; Liang et al. 2018). Similarly, online brainstorming sessions were held with construction experts to gain insights into the current measures that were being put in place by construction businesses. This, according to Field (2013), is an effective approach for establishing questionnaire constructs. The established measures and constructs were then put into questionnaire along with participants’ information.

Data collection

The constructs were put on five-point Likert scale, which ensures that the participants’ responses could be summarized, averaged and further analysed using different statistical methods (Nunnally and Bernstein 2007). The five-point Likert scale ranges from 1 to 5, where 1 represents measures that was not considered at all and 5 represents measures that were implemented by construction businesses. To ensure that the questionnaire will attain construct and inter-rater reliability, the questionnaire was pilot tested by construction professionals and some of the questions were reworded accordingly. To reach out to the targeted audience, especially during the pandemic, an online questionnaire distribution approach was adopted. Specifically, Google form, a free to use online platform for questionnaire administration that facilitates questionnaire link sharing and emailing as well as easy export of the responses into SPSS through Excel data format, was adopted. Apart from sending the link to the questionnaire to prospective participants, link to the questionnaire was also shared on professional-facing platforms, resulting into 103 responses from different construction professionals from the UK, with two of the responses considered unsuitable for data analysis due to extreme missing data. Also, other responses from other countries are insignificant and not used in the analysis. Table 1 presents an overview of the respondents, including their job roles and the size of organizations.

Data analysis

To meet the research goal of understanding the main and underlying measures that were put in place by construction businesses to weather the storm of Covid-19 in a way to mitigate the risk of litigation, this study employs a number of statistical data screening and analysis. These include reliability analysis, descriptive statistics and exploratory factor analysis.

Table 2. Results of the reliability analysis and descriptive statistics.

SN	List of Factors	Reliability Analysis		Significance Index	
		^a Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Mean Value	Overall Ranking
CM1	Good relationship is maintained with business partners and subcontractors as they are dealing with similar issues	.587	.916	4.5670	1
CM2	Collaboration with contractual parties to maintain goodwill while recognizing the need to share losses	.672	.913	4.2083	3
CM3	Potential site closure was adequately risk analysed	.701	.911	4.0000	6
CM4	Preparation was made in advance to serve contractual notices well on time in accordance with the contract	.720	.911	4.0000	6
CM5	Early decision was made on who will authorize site closure	.680	.912	4.0515	4
CM6	Decision was made and communicated on how workers will be paid (before the actual closure).	.684	.912	3.7010	13
CM7	Contract terms were studied to check information relating to notice period	.642	.913	4.0206	5
CM8	Contract amendments were negotiated with the partners, using COVID-19 as the main justification	.771	.909	3.7872	11
CM9	Disruption arising from COVID-19 was evaluated for whether it amounts to a "force majeure	.631	.914	3.8830	9
CM10	COVID 19 automatically triggered "force majeure contract on project	.602	.915	3.9362	8
CM11	Other existing clause(s) in the contract automatically cover COVID-19 (for instance "causes beyond a party's control" or to an "Act of God")	.667	.912	3.8125	10
CM12**	COVID-19 means that the contract is automatically terminated due to existing contract clause	.587	.921	2.6562	14
CM13	Changes were made to employment policies (sick pay, salaries, remote working, etc.) to accommodate COVID-19	.672	.913	3.7812	12
CM14	Employees were instructed to report any potential risk for dispute	.701	.911	4.3402	2

Data Screening and reliability analysis

To ensure reliability of the data used for analysis, Cronbach Alpha coefficients were estimated for estimated for each of the measures on the questionnaire. According to Field (2013), the use of Cronbach Alpha to evaluate internal consistency of data is essential when data is collected through a Likert-scaled questionnaire. Nunnally and Bernstein (2007) established that with Cronbach Alpha ranging from 0-1, a value above 0.7 suggests that the data is suitable for further analysis while a value above 0.8 suggests an excellent internally consistency of the data. Using SPSS V26, the Cronbach Alpha coefficient for the data was 0.919, suggesting an excellent consistency. In line with the recommendation by Field (2013), Cronbach's Alpha if item deleted was calculated to exclude any factor that has its "Cronbach's Alpha if item deleted" above the 0.919, which implies that such factor is not contributing to the overall internal consistency of the data. Through this, one factor "CM12 - Covid-19 means that the contract is automatically terminated due to existing contract clause" was removed from further analysis as it has its value as 0.921, which is above the overall Cronbach Alpha coefficient. The remaining dataset were then used for further analysis. The results of the reliability analysis are as presented in Table 2.

Descriptive Statistics

In line with the goal of the study, descriptive statistics was carried out to establish the top ranked measures that were put in place by construction businesses. Using SPSS, the means and standard deviation were computed to identify the top measures that were adopted as means of preventing contractual disputes and mitigations due to Covid-19 and its disruption to construction business operations. As shown in Table 2, the result of the descriptive statistics and the overall ranking suggests that the top measures that were put in place by construction businesses are as follows:

- CM1: Good relationship is maintained with business partners and subcontractors as they are dealing with similar issues.

- CM14: Employees were instructed to report any potential risk for dispute.
- CM2: Collaboration with contractual parties to maintain goodwill while recognizing the need to share losses.
- CM5: Early decision was made on who will authorize site closure.
- CM7: Contract terms were studied to check information relating to notice period

The established measures that were put in place are further discussed in subsequent section.

Factor analysis

As a data reduction measure, factor analysis was carried out to establish the underlying measures that were put in place as strategies for mitigating contractual disputes and litigation due to Covid-19 and subsequent disruptions that affected construction business operations. The statistical analysis technique is employed when the researcher seeks to replace a large number of variables with a few uncorrelated factors that can explain all the variables (Ajayi and Oyedele 2017). According to Field (Field 2013), suitability of data for factor analysis is usually established using a number of measures, including Bartlett's test of Sphericity and Kaiser-Meyer-Olkin (KMO). With KMO value ranging from 0 to 1, values above 0.6 is considered adequate, and Bartlett's test of Sphericity value is expected to be below 0.05 to be considered significant (Taherdoost et al. 2014). Using SPSS V26, the KMO value and Bartlett's test of Sphericity coefficient for this study are 0.856 and 4.4742 E -119 respectively, confirming the suitability of the data for factor analysis. As suggested by Worthington and Whittaker (Worthington and Whittaker 2006), Principal Axis Factoring (PAF) and Promax with Kaiser Normalization were employed for factor extraction and factor rotation respectively. These resulted into three factor components that explained the overarching measures that were put in place by construction businesses as means of preventing disputes and litigation that may be triggered by Covid-19 and its associated disruption to construction business operations. Based

on their component factors, the three components were labelled, and their Eigen factors and percentage of variance taken as their measures of significance. The three underlying factors are relationship management, early analysis of Covid-19 pandemic for potential impacts on force majeure provision and re-evaluation of contractual terms and conditions. These measures are further discussed in subsequent section.

Discussion

Top coping measures employed construction companies in dealing with covid-19 impacts of contractual obligations

These are the top measures that were put in place by construction companies to manage the impacts of Covid-19 on the contractual obligations between itself and other stakeholders in the industry.

Maintaining Good relationship with business partners and subcontractors

The outbreak of the Covid-19, which affected all stakeholders in the construction industry has motivated the desire to establish good relationships based on the awareness and understanding of the ongoing struggle with the Covid-19 pandemic, as well as to reduce claims and litigations. Through the presence of close relationships between the trade partners and the contractors on construction projects, a consistent and efficient job will be accomplished despite obvious challenges. Construction companies during stable times seek the opportunity to create business-to-business (B2B) relationships to improve on the existing efficiency and profitability of the business (Obal and Gao 2020). However, in times like that of Covid-19 outbreak, companies experience disruptions that affect existing B2B relationships, which negatively impact on the business. While the impacts of Covid-19 pandemic have led to several disruptions in existing business relationships, it may also present business opportunities for interested partners with competences to address urgent and short-term business needs. In finding solutions to the short-term problems, it gives the new partners opportunity to capitalize on long-term business relationships. Given the Covid-19 outbreak, it is crucial for construction companies to conduct business contract audit in order to re-evaluate the existing B2B partnerships based on performance criteria that are exclusively appropriate with the Covid-19 pandemic period. The outcome of such audit should give construction companies some clarity in understanding the virtues and contractual limitations of each of the existing partnerships in the context of the Covid-19 pandemic. Collaboration is important as any good relationship. In construction contracts, the room for parties to maintain good relationships is planned into provisions for conflict resolution through agreed alternative dispute resolution procedures, which include mediation, adjudication and arbitration (Mnookin 1998).

Instructing employees to report potential risk for dispute

While recognizing the Covid-19 pandemic uncertainty and its unprecedented challenges, the 2020 Global Construction Disputes Report (ARCADIS 2020), revealed that the global average cost of dispute is US\$30.7 million and the length of disputes dropped is 15 months. The number one cause of construction disputes as reported is, poorly drafted or incomplete and unsubstantiated claim with the Covid-19 pandemic impact playing significant role. The volatility and uncertainty will most likely lead

to uptick in the number and type of conflict as construction businesses become unable or unwilling to meet present contractual commitments and/or have readjust to new constraints on their budgets and operations (McKenzie 2020). The pandemic has put and continued to put the construction industry to economic, legal and social tests and this has led to government globally to consider relaxing lock down measures. As construction sites resume operations and workers return to jobsites, the impacts of coronavirus are expected to weigh heavily on the business going forward. The risks that Covid-19 impacts present to the business in the short term should be identified so that adequate strategies can be developed to meet associated challenges. Among the identified risks are those with dispute potential thus need to be proactively raised with contract partners to avoid disputes occurring in addition to the identification of suitable work around that represent fair actions in the overall Covid-19 space. Dispute risks arising out of the Covid-19 pandemic could be manifested in many project areas including but not limited to:

- Risk of disruption in business hindering companies from meeting business targets due to inability to export or import goods, self-isolation or illness, etc.
- Risk of critical part of the supply chain being interrupted, e.g. the lockdown of the workforce in China and travel restrictions significantly affect the supply of key materials manufactured in China.
- Risk of enormous staff absence hindering jobsite operations, e.g. interruptions to staff hiring, absence of vital or sizeable number of staff can lead to the closure of jobsites hindering business operations.
- Risk of counterparties failing in business with the construction company, e.g. counterparties birthing a risk to be mitigated.

Enhanced collaboration with contractual parties

With the governmental restrictions and advices on social distancing and self-isolation during illness, the impacts of the pandemic on the construction industry was intensified, leaving some jobsites closed and those in business uncoordinated. In addition to worries about protecting the health and well-being of workers during the Covid-19 pandemic, many construction stakeholders are still concerned about labour shortages, availability of materials and inevitably, projects delay. In an atmosphere of trust and no fear of opportunism, a contract may look beyond the traditional legally enforceable measures and focus on what the project is supposed to achieve and how to achieve it, a contract in this case can be seen as a technical aid to managing relationship between contractual parties (Woolthuis et al. 2016). Along the same thought, Tregurtha and Vink (1999) proposed that the bond of trust between the contracting parties would be more effective than the formal legal structure to guarantee the contract performance. With these vital considerations in the minds of the parties concerned, it is assumed that the contracting parties will wish to collaborate, in order to minimize the logistical strain of contractual matters and to avoid problems from slipping swiftly into uncontrollable and untimely conflicts.

Early decision was made on who will authorize site closure

In most part of the world, construction sites are closed following majorly the governmental recommendation to support in stemming the fast-spreading Covid-19 infection. Only sites or parts of the construction business deemed essential remained open.

The essential projects are those that support the continual functioning of other facilities and maintain essential level of utility (UK Government Guidance 2020). The essential projects are expected to comply with health and safety guidelines against Covid-19 spread on the jobsites. The threat to the viability of future projects is exacerbated by the Covid-19 pandemic, creating concerns around site closure or not. Construction sites shutdown resulting from the outbreak of Covid-19 generally results from one of the following scenarios:

- Site closure ordered by the governmental authorities, albeit with some exceptions to work-related to safety and essential projects.
- Site closure by project owners due to the cloud of uncertainty around the Covid-19 pandemic and the extent of damage from its impact.
- Site closure order from the construction companies to protect employees from infections or due to shortage in the required number of workers.

Contract terms were studied to check information relating to notice period

Contractual notice is the period of notice that may be decided by the employer on terms and conditions of employment. Notice period clauses give contracting parties the ability to reach out to each other about issues that may occur. To be clear and unambiguous on what is expected from the parties concerned, notice clauses are often carefully worded (Walsh and Maher 2020). Construction companies are expected to comply with every requirement spelt out in the notice clauses, without compliance, claims cannot be substantiated for events that ordinarily they are entitled for. The responsibility of both parties, as captured under the NEC contract is to notify of early warnings and under JCT, it is the responsibility of the contractor to proactively send notifications of relevant events and concerns. Recognizing the impacts of Covid-19 on construction projects require exchange of information and discussion with all project partners to monitor, mitigate and review risks - both the unfolding ones and the foreseeable ones. In the case of a lawsuit, the court uses the notice as a condition precedent, one that must be met before the claim by the contractor can be valid, even though it depends on the type of claim and the language of the notice clauses. Without giving notices in the intended circumstances, it may defeat the contractor's claim to, for instance, either completion date extension or additional money. In the same vein, a waiver can be sought from the employer (client) for failing to comply with a notice requirement, however, its agreement depends on the benevolence of the client. In the event of contractor's failure to issue notice as part of contract requirements, it may provoke a challenge of the notice by the client, which might hinder the success of an otherwise valid claim.

Underlying measures for managing the impacts of covid-19 on contractual obligations

Based on the three-factor components extracted and rotated from factor analysis, this section discusses the underlying measures that construction businesses are using for mitigating the impacts of Covid-19.

Relationship management measures

This section focusses on the relationship management as a measure aimed at minimizing problems associated with fulfilling contractual obligations in construction projects. The percentage of total variance is the highest (47.472%) for this factor grouping with four measures to manage relationships between contractual parties as shown in Table 3. "Relationship Management Measures" was the factor name imposed on the grouping as the contractual obligation measures suggested by the factors could only be achieved through proper management of relationship between contractual parties. Without doubt, the achievement of these measures is reliant on the willingness of contractual parties to avoid costly hassles by engaging in a fair compromise and maintaining a cordial and harmonious relationship. To guarantee adequate management of contract, its three areas of contract administration, relationship management and service delivery management must be given considerable attention. Maintaining a healthy and cooperative relationship with your contractual partners during the uncertainties of Covid-19 pandemic is crucial. As a significant measure, Jarratt and Fayed (2001) argued that the capacity to develop and manage relationships with contractual parties has been established as a very important strategic capability of companies. For organizations extending their organizational reach beyond their core competence and developing a network of extensions to access required expertise for value creation, it is important to have a relationship management capability that offers the necessary mechanism to leverage those expertise (Sheth and Parvatiyar 2000). The outcome of a partnership can be connected to the operational framework for monitoring and enforcing contractual relationship between the contractual parties (Nachappan 2009; Panda 2016).

Early analysis of covid-19 pandemic for potential impacts on force majeure provision

The likelihood of change in the dynamics of the construction industry is undoubtable with the outbreak of Covid-19; hence, there is need for an early analysis of its potential impacts on a force majeure claim. The factor component (with total variance of 8.143%) consists of three factors that all the suggested strategies for appraising early Covid-19 impacts on internal and external contractual obligations most especially the force majeure provisions. This implies that without considerable attentions to force majeure provisions in different contracts amid Covid-19 pandemic, disputes cannot be avoided among contracting parties.

With the spread of the coronavirus pandemic, there have been several debates about whether or not the force majeure provisions provide grounds for Covid-19 as an unforeseeable occurrence beyond the contractor's jurisdiction (Kabiru and Yahaya 2020). Consequently, in the context of Covid-19 pandemic, the declaration of force majeure is to a large extent an uncharted territory. Many contracting parties may be unable to comply with their contractual obligations against the backdrop of business closures and travel restrictions amid the pandemic. During the pandemic, the burden of proofs will be on the party seeking to rely on the force majeure provision to prove Covid-19 pandemic hindered their contractual performance. The WHO declaration of Covid-19 as pandemic without a force majeure reference to a pandemic will not trigger a force majeure clause and this may lead to disputes between parties in addition to project delays. Project owners will need to examine contractual provisions that include force majeure, projects termination, notice requirements,

Table 3. Component labelling and its associated criteria.

SN	Extracted and Rotated Components	Eigen Value	% of Variance	Factor Loading
COMP – 1	Relationship Management Measures	6.646	47.472	
CM – 1	Good relationship is maintained with business partners and subcontractors as they are dealing with similar issues			.982
CM – 2	Collaboration with contractual parties to maintain goodwill while recognizing the need to share losses			.795
CM – 3	Potential site closure was adequately risk analyzed			.601
CM – 4	Preparation was made in advance to serve contractual notices well on time in accordance with the contract			.624
COMP – 2	Early analysis of covid-19 pandemic for potential impacts on force majeure provision	1.140	8.143	
CM – 9	Disruption arising from COVID-19 was evaluated for whether it amounts to a "force majeure			.873
CM – 10	COVID 19 automatically triggered "force majeure contract on project			1.007
CM – 13	Changes were made to employment policies (sick pay, salaries, remote working, etc.) to accommodate COVID-19			.532
COMP – 3	Re-evaluation of contractual terms and conditions	.645	4.605	
CM – 5	Early decision was made on who will authorize site closure			.752
CM – 6	Decision was made and communicated on how workers will be paid (before the actual closure)			.912
CM – 7	Contract terms were studied to check information relating to notice period			.793

time extension entitlements, resource availability, health and safety measures, etc. (Critelli et al. 2020).

Re-evaluation of contractual terms and conditions

The third component of the underlying measures for managing the Covid-19 pandemic impacts on contractual obligations is labelled as "re-evaluation of contractual term and conditions" as a result the three integrated component factors that point to the needed changes to the existing contractual provisions. This factor incorporates different contractual dispute avoidance measures with respect to surviving the impacts of Covid-19 by construction firms. Like other areas of the construction business, the coronavirus pandemic has had dramatic consequences on the labour market, causing a re-evaluation of employment contracts, which in some cases, has contributed to loss of earnings, production, remuneration and employment (Ogunnusi et al. 2020). Under such cases, employees must be consulted and carried along with the construction company's decisions, to avoid face off with the law or engaging in illegal labour practices, thus subjecting the company to fines.

In the same vein, more and more construction firms rely on force majeure clauses or impossibility of performance to prove they are not in violation of their contracts. Several considerations are weighed by the judiciary in the event of a lawsuit to see whether a force majeure clause extends to a certain situation. These considerations are; whether an event qualifies as force majeure, whether an incident in question could have been foreseen and whether non-performance is a direct consequence of force majeure. The re-adjustment of construction firms to the current economic climate is a necessary trigger for them to re-evaluate all their contractual terms and strengthen those conditions. Such reevaluations will help construction business find contractual gaps, recognize new required clauses and revise them.

Conclusion

The impact of Covid-19 pandemic on the construction projects is far from consistent, with many projects unexpectedly suspended for risks be analyzed, and for employers and site managers to determine how, if at all, they will continue to work. Aside contractual incompleteness and opportunism being the prime causes of contractual disputes in the construction industry, the coronavirus pandemic impacts the industry more with unprecedented disruptions in the supply chains and workers shortage.

Disputes, claims and lawsuits related to contractual terms and obligations would inevitably increase as a result of project delays, force majeure provisions or attempts to receive compensation for damages. When the immediate impacts of the pandemic on contracts became apparent, the focus shifted to mitigating delays and costs. A lot has been said about the need for collaborations between contractual parties as a survival strategy through the pandemic, to avoid adding a long-drawn-out dispute to already difficult working conditions. Many construction companies adopted different strategies to survive the Covid-19 pandemic, particularly in preventing contractual disputes between parties. Based on the importance of dispute avoidance measures in contract management, this study explores the construction industry practitioner viewpoints on contractual dispute avoidance measures adopted during Covid-19 pandemic, covering top and underlying measures capable of mitigating Covid-19 pandemic impacts on contractual obligations.

Maintaining strong relationships during their trying times will ease renegotiation of contractual terms that the pandemic has made impractical allowing the firm to save on lawsuit costs and prevent risks associated with lawsuits. Mutually agreed steps such as performance deadline extension for some months or agreeing to wait for Covid-19 vaccination before contract execution would create opportunities for parties to continue working together. Though, there would be need for mediation during the renegotiation of the contractual terms and conditions.

To explore and understand the legal ramification of Covid-19 impacts on force majeure clauses, this study also suggested early analysis of the Covid-19 pandemic impacts on all the contractual clauses to manage contractual obligations. Due to the risk of wrongful declaration of force majeure that party is not contractually entitled to, early analysis favouring careful thoughts is imperative prior to reliance on force majeure clause. This is important to save the party from repudiatory breach of contract allowing the other party to be entitled to claim damages as a consequence. Complete reliance of the party on the force majeure clause to justify a breach of contract depends on terms of the contract in question, the statute in force and the relationship between the potential contractual violations and COVID-19. However, contracts without the force majeure clause can still argue that the outbreak of Covid-19 made performance impossible. This is dependent on the relevant governing laws and the relationship between the failure to perform and Covid-19 pandemic. Despite the severity and effect of the Covid-19 pandemic on the construction businesses, there is no foregone conclusion

that a statutory force majeure clause would apply under many laws around the world.

Also, this study suggests re-evaluation of contractual terms and conditions for site opening or closure decisions, contractual information on notice period and changes to some aspects of employees' contracts in response to the impact of Covid-19 on contractual obligations. The Covid-19 climate has pushed many construction firms to the edge, making re-evaluation of contractual terms and conditions imperative in a bid to adjust to the prevailing economic realities. The re-evaluation of all internal and external contracts comes with advantages like contractual gaps discovery, new required contractual clauses recognition and earnest revision of old clauses. The purpose of contractual re-evaluation of existing terms and conditions is not to circumvent obligations, but to recognize them and plan to resolve them while preparing the organization for greater resilience in the future. Understanding of the key clauses and provisions of contracts, which is an asset to strengthen current or future negotiations of key contractual clauses, is essential to the resilience of construction firms. This study has been carried with the aim of exploring the different contractual dispute avoidance measures adopted by construction firms in stemming the impacts of Covid-19 pandemic on contractual obligations. The identified measures were explored within the circles of construction site management and other stakeholders in the construction industry. Among the identified measures, the key coping and underlying measures employed by the construction firms in dealing with the impacts of Covid-19 have been discussed.

Disclosure statement

No potential conflict of interest was reported by the authors.

Data availability statement

All data generated or analyzed during the study are included in the submitted paper.

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