Chinese Journal of Geotechnical Engineering

Volume 44 Issue 1 Year 2022

Research to Study the Disruption of the Supply Chain, Shortage of Contractors, Workers, and Material, Cancellation of Contracts Due to Covid-19

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Keywords: COVID-19, supply chain, construction industry, disruptions, shortage, contractors, workers, materials, cancellation of contracts, resilience, adaptive capacities, risk mitigation, contingency planning.

DOI:

10.11779/CJGE202201.5

ABSTRACT: The outbreak of Covid-19 has immensely contributed to the construction industry with the disruption in the supply chain management, shortage of workforce, and failure of contracts. This study identifies the challenges and risks that the pandemic imposed on the construction industry with a detailed literature review of existing literary works and studies. The systematic methodological approach of data collection and analysis provides insights into the resilient capabilities of the construction industry in mitigating the challenges and risks associated with supply chain management and construction operation. The findings and results of the research study even demonstrate the requirement of strategic policies and solutions in addressing the uncertainties due to such disruptive forces for achieving the operation goals. Based on the findings and results, this paper further suggests recommendations for industry policymakers in ensuring long-term viability and success with better supply chain management, workforce utilization, and collaborative relationships. Considering the overall learning outcomes, this research study will be the foundation and guiding principles for future research on analyzing the impact and disruption caused by Covid-19.

1. INTRODUCTION

The Covid-19 outbreak significantly impacted the global business and industry context including the construction industry. This global pandemic situation has created inexplicable disruptions to the various activities of the construction industry which include supply chain, shortage of contractors, workers and cancellation of contracts. All these factors prove to have significant consequences on the overall construction industry. This study aims to find the impactful nature of such an unprecedented situation and the disruption it creates to the construction industry for having a greater overview and insightfulness for future planning and contingency in mitigating future risk.

2. REVIEW OF LITERATURE

According to Farooq et al. 2022, various factors that contribute to the disruption in the various construction project delays include lack of skilled labor, poor management, and changing working conditions. The existing challenges associated with the construction industry have further been exaggerated due to the global outbreak of Covid-19 causing excessive disruption in the supply chain system, material sourcing, and site management (Salami *et al.* 2021). In the context of analyzing the impact and disruption due to the outbreak of Covid-19, this study paper integrates a comprehensive literature review of the existing literature related to construction projects and industry contexts. The challenges and risks have even exposed the risk exposure to the overall supply chain networks and efficacy of the construction management process.

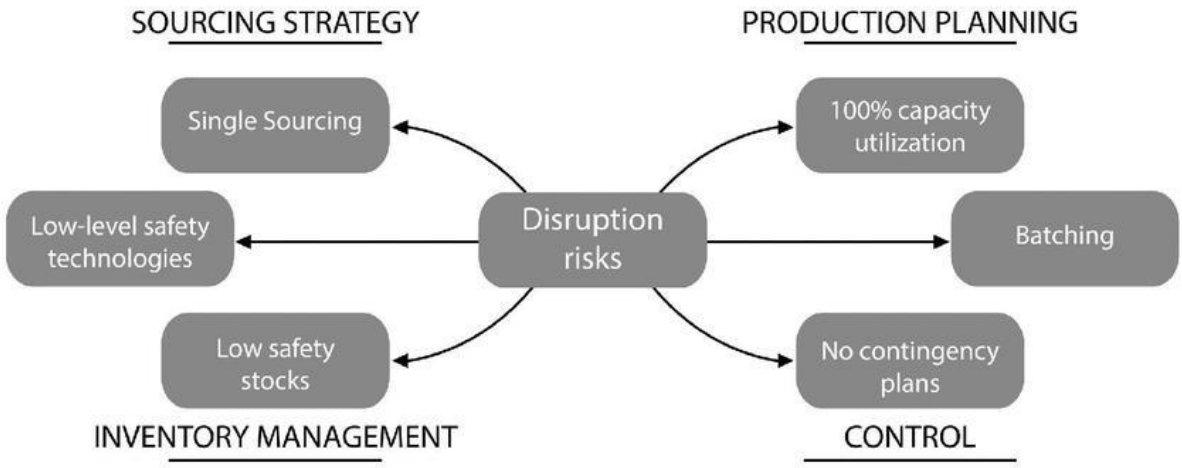

Figure 1: Disruption risks in the supply chain
(Source: https://www.researchgate.net)

According to Salami et al. 2021, the construction industry has been significantly affected by the outbreak of Covid-19 in various ways which include suspension of projects, overestimation of costs, negativity among workers, shortage of labor, and halting in contracts. Identifying the possible risks and challenges associated with the construction industry, effective solutions, and strategies are even highlighted in various literary studies for mitigating the impact of the pandemic. The study further demonstrates the need for a strategic policy with technological adherence for achieving an effective supply chain system, better workforce management, and a collaborative approach with clients.

The findings from the existing literature studies further demonstrate the importance of strategic initiatives in addressing the challenges of making effective construction management.

3. MATERIALS AND METHODOLOGY

This chapter of the research study analyzing the impact and disruption of the Covid-19 outbreak in the construction industry including the supply chain, shortage of contractors, and cancellation of contracts follows the systematic methodological approach with the second approach. Both the quantitative and qualitative data and information are collected and analyzed within the context of the research objectives (Biswas *et al*. 2021). The research methodology further demonstrates the detailed overview of the applied design, ethical consideration, and data collection approach for establishing the research viability and acceptability. The strategy that has been selected for the secondary research approach includes an archival strategy in collecting the relevant data and information for getting a greater overview. Secondary data collection is applied with the accumulation of data based on existing literature, journals, and articles for further detailed analysis. Even the ethical considerations related to data sourcing have been valued with the standards and procedures of the research conduct.

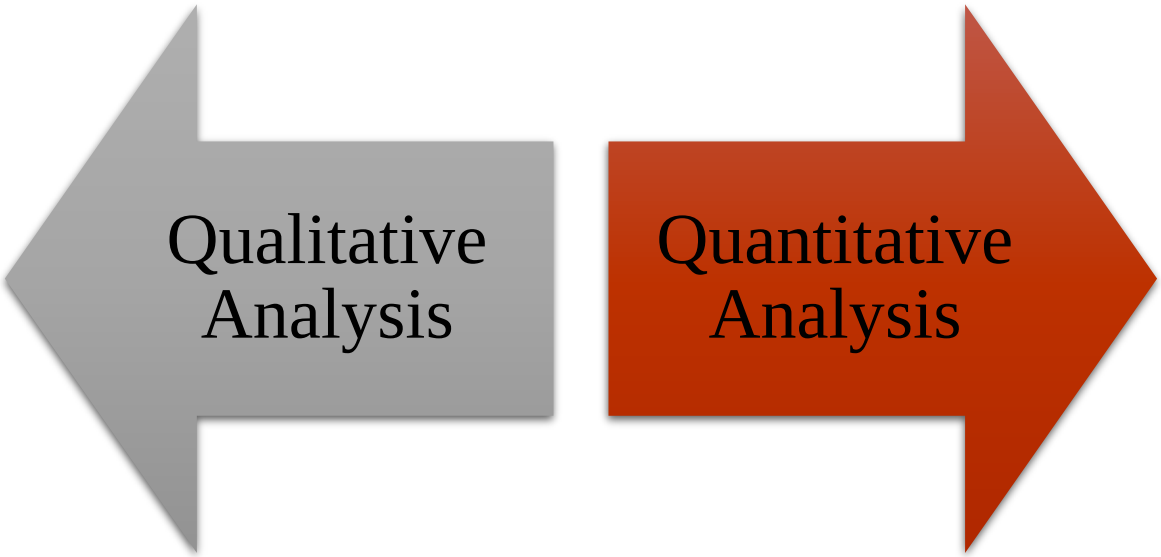

Figure 2: Research design
(Source: Self-created)

4. RESULTS AND DISCUSSION

The systematic research methodological approach of the research study provides more comprehensive and inclusive results and findings in analyzing the impact and disruption of Covid-19 in the supply chain, lack of workers, material sourcing, and contract cancellation in the construction industry. The results of the research study establish the broader contextual significance of Covid-19 with the analysis of existing literature reviews. The findings further project that the challenges and risks that emerged due to the Covid-19 outbreak have caused immense disruption in the construction projects, limiting meeting the targets in terms of import and export of goods and services. The social restrictions imposed during the lockdown have significantly restricted the free flow of the supply chain ecosystem (Farooq *et al*. 2022). So the inability and inefficacy caused by the disruption of Covid-19 in the context of the supply chain, shortage of workers, and contract failure have immensely contributed to the overall project operation and success of the construction business.

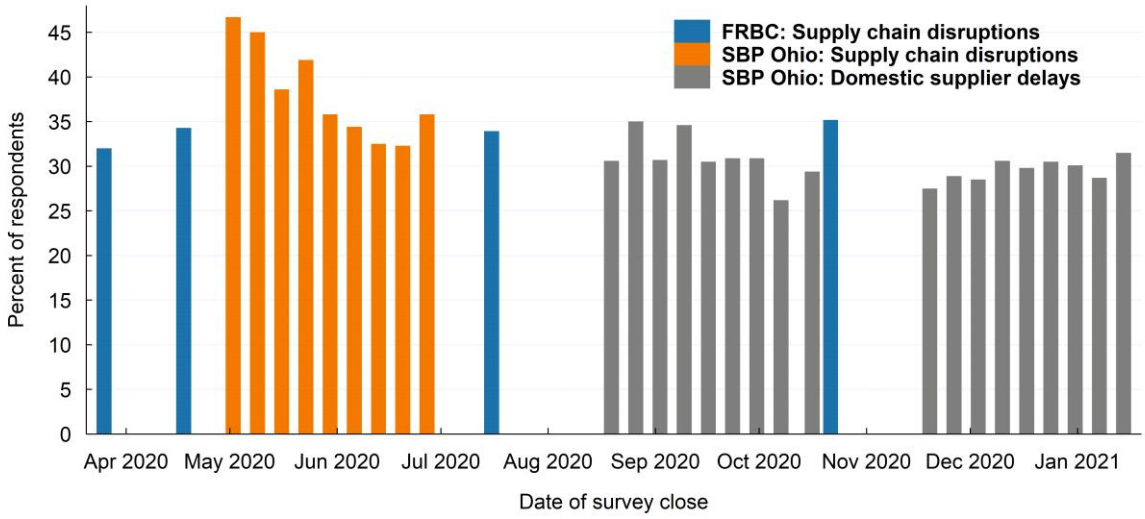

Figure 3: Supply chain and Covid-19 disruption
(Source: https://www.clevelandfed.org)

Site closure due to government regulations has contributed to various challenges of contracts including ineffective communication between parties, failure to claim, and validation of the claim. Failing to perform these activities has resulted in the rejection and cancellation of construction contracts. So considering the findings and results of the detailed research would be the guiding principles for future research in preparing for such a disruptive context of business operation.

5. CONCLUSION AND FUTURE SCOPE

The detailed systematic discussion on the analysis of the impact and disruption of Covid-19 in the supply chain, worker shortage, and contract failure sheds light on the extent of effective factors that contribute to the construction industry. A detailed literature review of the existing studies demonstrates the relevancy and acceptability of examining the risks and strategies of the construction industry in mitigating such disruptive forces (King *et al.* 2021). The applied research methodological approach and data sourcing constitute the results and findings as regards research objectives. The findings of the research provide insights into the construction business which will be effective for the policymakers in dealing with the challenges and risks imposed due to Covid-19.

The discussion further leverages the scope for future research in finding the impact of a pandemic to supply chain disruption, worker shortage, and contract failure. This study even sets the direction for future research in examining the advantageous role of technology and innovation in dealing with such a disruptive force for stabilizing construction operations. In conclusion, the results and findings of the research prove to be the guiding principles and foundation for future comprehensive research in developing strategic solutions for tackling these challenges.

6. RECOMMENDATIONS

Considering the findings and results of the systematic research methodology, this research paper even suggests a few recommendations for preparing for any unprecedented disruption in a future business context. A few of the recommendations include-

- The construction industry should evaluate and identify the potential challenges and risks associated with disruptive forces.
- The industry should impart strategic contingency planning prioritizing better risk management in achieving the utmost operational excellence.
- The industry should focus on more technological adaptation for a resilient supply chain system.
- Increased adaptively, assurance of safety, and better collaboration would be effective for mitigating such disruptive forces for the construction industry.

REFERENCES

1. Biswas, A., Ghosh, A., Kar, A., Mondal, T., Ghosh, B. and Bardhan, P.K., 2021, February. The impact of COVID-19 in the construction sector and its remedial measures. In *Journal of Physics: Conference Series* (Vol. 1797, No. 1, p. 012054). IOP Publishing.
2. Farooq, S.A., Indhu, B. and Jagannathan, P., 2022. Impact of covid-19 on supply chain management in construction industry in Kashmir. *Asian Journal of Civil Engineering*, pp.1-10.
3. Jayathilaka, R.D.W.W. and Waidyasekara, K.G.A.S., 2022, March. A systematic review on contractual challenges in construction industry during a pandemic situation (COVID 19). In *Proceedings of the International Conference on Industrial Engineering and Operations Management Istanbul, Turkey* (pp. 1-12).
4. King, S.S., Rahman, R.A., Fauzi, M.A. and Haron, A.T., 2021, February. Mechanisms for addressing the impact of COVID-19 on infrastructure projects. In *IOP Conference Series: Earth and Environmental Science* (Vol. 682, No. 1, p. 012047). IOP Publishing.
5. Salami, B.A., Ajayi, S.O. and Oyegoke, A.S., 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*, pp.1-9.