Building Success in Uncertain Times: A Case Study on the Shifting Dynamics in the operations and management procedures of a Private Construction Company in the Philippines Across Pandemic Crisis

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Abstract*—This study investigates the operational dynamics of ABC Construction Incorporation in Pampanga, focusing on the comparison between pre-pandemic and pandemic periods. The unprecedented disruption caused by the COVID-19 pandemic profoundly impacted the construction industry, leading to temporary halts in operations during the initial phases of the crisis. Against this backdrop, ABC Construction encountered various challenges, prompting a comprehensive examination of operational disparities and adjustments made in response to the pandemic. Notably, the company swiftly integrated IATF protocols into its operational framework, particularly for ongoing projects initiated before the onset of the pandemic. Through structured interviews, nuanced insights emerged regarding the multifaceted effects of the pandemic on operational dynamics, with ABC Construction demonstrating resilience in adapting to evolving circumstances. Despite facing disruptions, the study reveals that the overall impact on operational efficiency was moderate, with discernible differences observed in accomplishments, protocol adherence, financial management, and manpower allocation. Remarkably, the quality of work produced by ABC Construction remained unaffected, underscoring the company's emphasis on individual accomplishments over mere manpower quantity. These findings highlight the adaptive capacity of construction enterprises amidst unprecedented challenges, with implications for strategic decision-making and operational resilience in the face of future disruptions.

***Indexed Terms*—Adaptability, Flexibility**

I. INTRODUCTION

Project managers are vital on the broad, dynamic and complex landscape known as the construction industry. They are the intersection, orchestrating and harmonizing any number of separate elements to take a completed project from inception to completion. They are the managers who coordinate construction personnel and equipment, administer personnel-placing systems and advise superiors or subordinates of personnel requirements. They manage construction technology in the maintenance of the computer-aided systems testing and manage resources within a construction firm.

Ajayi et al. emphasizes the critical role of effective construction management in minimizing waste and reducing accidents on construction sites while Boadu et al. shed light on the challenges faced in developing countries, such as the scarcity of skilled workforce and reliance on labor-intensive methods, impacting health and safety management [1], [2].

The collaborative nature of construction projects requires project managers equipped with competencies in group dynamics, communication efficiency, and diversity optimization [3]. There are also other factors affecting project management like Construction logistics which was outlined by Ying et al., that assumes centrality in supply chain management, influencing project management and operation [4].

In the continually evolving realm of the construction industry, flexibility and adaptability stand not as mere buzzwords but as indispensable elements reshaping our approach to projects. The construction site was once characterized by rigidity, now transformed into a hub where adaptability gracefully engages with challenges, and flexibility adeptly maneuvers through evolving demands.

The role of adaptability extends into various niches within construction, such as safety and quality control management strategies in urban railway engineering construction [5]. Modular solutions for healthcare facilities underscore adaptability as a strategic response to project complexity and unforeseen adaptations [6]. The effective operation of construction schedule management systems for large-scale projects requires innovative management ideas to promote smooth progress and adaptability [7].

In construction operation and management, unexpected and contemporary challenges are inevitable. A notable example is the formidable shadow cast by the unprecedented COVID-19 pandemic, fundamentally altering the entirety of the construction industry. This global disruption sends ripples across various facets of construction operations and management, posing an unparalleled test of adaptability and resilience. Amidst this complexity, flexibility and adaptability in the construction industry transforms into a critical demand, a vital factor in holding the construction industry together in the face of unprecedented challenges."

The studies by Pamidimukkala & Kermanshachi and Hatoum et al. bring to light the hurdles faced by construction workers during the pandemic, ranging from health and safety concerns to disruptions in workforce availability and material supply chains [8]. The repercussions extend further, as noted by Rehman et al. and Sutterby et al., revealing cost overruns, time delays, material shortages, decreased worker productivity, and financial losses within the construction industry [9], [10].

Moreover, the pandemic has required the development of new strategies and actions to mitigate its effects on construction organizations. Raoufi & Fayek and Iqbal et al. emphasize the implementation of safety practices and crisis management frameworks to enhance productivity.[11], [12] The substantial influence of the pandemic on construction projects is further elucidated by Bernardo, affecting workforce availability, time management, supply chain shortages, and communication. [13]

In along with these challenges, the pandemic has prompted discussions on construction claims, particularly focusing on force majeure and the scope of its impact on the industry.[14] The studies collectively underscore the need for resilience and lean construction practices to navigate the challenges posed by the pandemic and ensure the sustainability of construction services companies [15]. Furthermore, the pandemic has demanded budget-refocusing policies to maintain sustainability in the face of significant profit losses and decreased worker productivity within the construction industry [16], [17].

II. LITERATURE REVIEW

Since the World Health Organization (WHO) announced the coronavirus 2019 (COVID-19) outbreak as a pandemic, many countries have declared a complete national lockdown after a remarkable spike in COVID 19 cases. These decisions have restricted the movement of people and resulted in a complete shutdown of many businesses across many sectors. The construction industry, as a significant growth driver of the economy with no exception, has also been completely shut down. All the business activities have been shut down unless it falls under the essential categories as necessary supplies and medical sectors, in addition to a few vital projects which are necessary to support the health system and safety of the people. Relatively, it has limited the business around the world and companies have shifted to work Work-From-Home (WFH) concept remotely to accommodate and run the business and services [18]. The construction industry business is at risk because of the adverse impact of COVID-19 that leads to a decrease in economic growth. The restrictions on construction projects due to the pandemic crisis has weakened economic growth, enhanced unemployment, disturbed supply chain of construction materials, and increased the loss of investment [19]. Business closures generated a

catastrophic effect, not only on the country's Gross Domestic Product (GDP) but also on a global scale. The pandemic impacted the country's economy, which led to a severe recession in 2020, with a 9.6% year on year decline in GDP. Based on the information gathered, this was the greatest annual fall ever observed since the national accounts data collection for the Philippines started in 1946. During the time of extreme restrictions, the GFCF and GVA of the construction industry dwindled from the first quarter to the third quarter of 2020 but began to recover by the fourth quarter of 2020 until the last quarter of 2022 [20]. Amidst the pandemic, the construction industry was hit hard and had to shut down completely, resulting in a significant impact on the workforce and labor worldwide. The outbreak also changed the working conditions, causing workers to become increasingly concerned about their physical and mental health. As construction plays a crucial role in economic development, having an adequate number of workers is essential to complete projects on time. Even before the pandemic, a shortage of construction workers was a common issue, but COVID-19 made it worse. The virus spread easily among workers, and many companies reduced their workforce due to project suspensions. Labor shortage and job loss were identified as the most significant impact of the pandemic, and fluctuating material prices were also a contributing factor [21]. Moreover, to survive during disasters, the focus on improving market-share, ecological consciousness, and differentiation through technology leadership, along with a reliable and sustainable SC network requires a workable framework. However, approaches such as being lean, green, and resilient, and ensuring sustainability are established, and practiced supporting emerging market requirements [22]. In a pandemic that has affected all countries of the world, organizations seeking to maintain stability of functioning need to rely on modeling methods, outsourcing, reengineering, integrated quality management, restructuring of financial obligations, optimization of the staffing table, which will provide a competitive advantage over others [23]. Although some preliminary surveillance data on the impacts of the COVID-19 pandemic in the context of the construction industry exist, there is much that remains unknown. Insights from industry stakeholders are particularly lacking in the broader literature. Accordingly, the reported effort focused on gathering information on the effect of the COVID-19 pandemic from the perspective of the construction workforce. The effort also focused on identifying new opportunities that may have been created and efforts that were undertaken to manage the challenges associated with the pandemic.

The findings are expected to be useful as the industry continues to combat the pandemic and grapple with preserving safety and maintaining productivity. The findings can also serve as a resource for the future if the industry encounters similar epidemics, pandemics, or emergencies [24].

III. RESEARCH METHODOLOGY

This study employs qualitative research utilizing descriptive research methods. The descriptive study is mainly concerned with describing the present condition and among the descriptive research methods, interviews will be utilized to collect data. A descriptive study runs a precise representation of features of a specific individual, group, or phenomenon. It determines the frequency with which something occurs or categorizes information which contains organized and factual data of the group or individual. This design was used since the main agenda of the study is to find the comparison on the overall general operation of ABC Construction in the Philippines before, during and after the pandemic.

The researchers conducted an in-depth interview with the target respondents of the study, who are selected ABC Construction's construction specialists in the Philippines. The research method used in this study is direct interviews with construction personnel from the company which includes One(1) Operations Manager, One(1) Project Manager, Two(2) Project In-Charge, Site Engineers, Two(2) Site Architect, and Two(2) Foreman, to ascertain how the company dealt with changes during and prior to the current pandemic. Apart from the construction team, information was acquired from chosen non-construction workers, such as human resources and the chief of the accounting department.

Actual and virtual interviews with supervisory personnel was conducted to collect data for the approach of the study. The individuals who were

selected to be the participants were responsible for the management of the company's skilled and unskilled workforce.

The focus of the study is determined by the questions, which are based on a comparison of the pandemic phases (before, during and after). The pilot interviews largely used a ten-question survey that were carefully thought out and validated by management professionals.

The qualitative analysis of the data acquired through in-person and virtual interviews with participants analyzing the productivity of the ABC Construction before, during and after the pandemic will be conducted. The questionnaires created by the researchers will be used to discern operational performance, adaptive strategies, and productivity efficiency. The data was evaluated qualitatively by the researchers.

IV. RESULT AND DISCUSSION

The data analysis and results of this study are presented and deliberated in detail in this chapter. It provides information concerning the method that was used in undertaking this research. The Chapter also describes the various stages of the research, which include the selection of participants, the data collection process, and the process of data analysis, and discusses the role of the researcher in qualitative research in relation to reflexivity.

1. As a (Position), what do you think are the factors affecting the general operation in construction during the pandemic?

The participants answered that they were in need of manpower. As per the protocol, there was a limitation for the manpower. It also depends on how big the area the workers work on. Thus, it leads to a lot of delays and problems with the time schedule which makes it a major factor affecting the operation during this time. In June 2020, in terms of the operation, it was hard to manage because of the fear of contracting COVID-19 since it had only been months since it first occurred in the Philippines. The workers' mental stability was affected by the fear of contracting COVID-19 while they were working. Seeming impossible for people not to interact while doing the assigned work is also one of the factors. This fear was still in workers' mentality and could not work properly. Over time, the prevailing fear diminished, allowing individuals to surmount it. As for the cost, it was also affected because it was not anticipated on the bill of quantities or contract for the necessary health protocols to comply. Additionally, in terms of accomplishment, the participants observed in the operation during the pandemic were more beneficial because the monitoring of the manpower is more focused.

One of the factors was implementing the IATF protocols which was a big challenge, especially in how to incorporate it on-site considering the nature of work on construction. Looking into it, it seems impossible to work using a face mask and face shield while working and may risk a possible danger to the workers. Hence, adjusting the safety protocols according to the condition of the site which is still in accordance with the IATF and has maximum safety for the workers.

Lastly, the biggest factor was the mobilization of manpower in which entering and exiting required that all of the manpower and even personnel were at their respective facilities. The company provided the workers with resting facilities where they could only stay there throughout the duration of the project so as to ensure their safety and prevent contracting the disease.

2. How did the implementation of the Inter Agency Task Force (IATF) safety protocol affect the operational performance during pandemic?

According to participants, even while complying with health protocols, the coordination in the management and operations was not compromised, rather it was constant. Also, the operations became stricter compared to without a pandemic and were more hands-on as there is a need for monitoring in complying with health protocols that were mandated by the government without risking the workers' safety. The participants stated the impossibility to implement the wearing of face masks and face shields while working as it can cause suffocation yet in doing so, the manpower had risk of contracting the disease. Hence, the adjustment of the safety protocols that are applicable in the field of construction where the protocols are not violated was done.

3. Did the company sustain normal operations despite a decrease in manpower? Compared to before the pandemic, did you modify or create alternative procedures to deal with the loss of manpower?

The participants stated that with the arrival of covid, aside from negative impact there are also good effects which are the assigned works were monitored closely better than the past projects before the pandemic. It was proven that there's no need for too much manpower to finish the work, rather the rate of accomplishment of a person is more important. Fretting about the problem of limited manpower is not needed, rather they adjusted much better with fewer workers to handle. The participants made a change based on how much manpower available and what areas should the participants focus on completing a task for a day or month.

In limiting the available manpower comes the problem of areas still pending since there was a limitation for manpower. The participants also mentioned that the procedures have not changed but rather just added and adjusted to comply with the health protocols.

The need for manpower was rather hard to solve as the IATF protocols only allowed a limited number of people. An example was given, for a 6 square meter area, there should be at least two people working on masonry works, and should be completed in a day. But because of the pandemic, only one person was allowed to work the 2 people of one day work which turned into one person of two days' work. Thus, implicated the deadlines and schedule agreed in the contract.

It was harder to control the workers due to the hot weather and impossible to avoid taking off the mask and face shields the workers had on. The use of face masks and face shields was strictly implemented. Anyone cannot enter the premises without these protective gears. There will be sanctions given to those who do not follow the health protocol. The first one was a notice. If found out the second time, there will be a possibility of getting fired. Those are some of the implemented penalties so that the workers will follow the health protocols.

The structure quality is the same as before the pandemic even if the manpower is limited. As the participants mentioned, the quality of the building should never be compromised with or without the pandemic. The productivity rate of full-on manpower was high but to compare it to how the participants were handled during this pandemic, the quality was rather high compared to before for a reason of being able to monitor the assigned works closely.

It was proven that there is no need to fret about the problem of limited manpower, they adjust much better with fewer workers to handle. The participants adjusted and made a change based on how much manpower available and what areas should the participants focus on completing a task for a day or month. The productivity rate of full-on manpower was high but to compare it to how the participants were handled during this pandemic, the quality was rather high compared to before which is able to monitor the assigned works closely.

4. Improper execution based on the architectural and structural design.

According to the participants, the execution was maintained, properly done, and correctly applied the Inter-Agency Task Force (IATF) protocols during the duration of the projects in this pandemic. Furthermore, as they have mentioned, the communication was constant thus, the information was properly disseminated.

Changes in the plan were common even before the pandemic, therefore the part where there is a big change and was found difficult was receiving the deliveries as there is a procedure to follow before directly receiving them. If the delivery has not been received before the anticipated time, the participants would then focus on and work on other scope or areas to work on.

5. Difference in the structure quality before and during pandemic.

The participants stated that with or without a pandemic, the quality cannot be compromised. No matter what the situations are, the requirements should be met. The lack of materials which are available is harder to find and includes the delays in deliveries. In this case, the participants emphasize and give importance to a lead time. This means that the materials should be ready to use one week to two weeks ahead of the supposed schedule. Furthermore,

the manpower may be limited but when it comes to the accomplishments of work, it was rather high.

6. Is there a difference in Standard Operation Procedure (SOP) before and during pandemic?

According to the participants, The SOP did not change. The only difference was the implementation of the mandated protocol which is the IATF. With the IATF, the participants focus on strict implementation of health protocol. Moreover, it was emphasized that with less manpower there was more output. The participants state that more manpower is not the answer to meeting the deadline of the operation rather the accomplishment rate in the operation is more important. Furthermore, in the actual field the less manpower, the better the output.

7. How did the management and operation adjust on the pandemic?

According to the participants, within the team, the coordination was constant and the information should be properly disseminated to everyone. If there is a need for change in the plan, it should be applicable to both general contractors (management/owner) and other contractors and subcontractors. Everyone from the team to workers should be well informed, through compliance considering that the protocols are implemented as per the need of each industry.

8. How is the efficiency of the productivity?

The participants explained the difference between the more manpower more output/ less manpower of a high-quality mean. It was mentioned that as the manpower is lessened, the monitoring of the work of each team was made easier thus, the quality of the work was much higher. Moreover, the manpower was much more productive compared to before the pandemic. While more manpower is centered on producing more output but still in accordance with the standard quality.

9. How is the financial status of the company during pandemic?

According to the participants, in terms of implementing the minimum health safety protocols the company had to provide facilities like an isolation and disinfection area, facemask, face shield, and other protective gear including the additional cost of materials and delivery charges which are then added as an additional cost which are not anticipated in the Bill of Quantities or Contract. Due to the delays caused by the pandemic cash flows were also affected which is the bread and butter of the company. Aside from the fact that the construction is still recovering from the pandemic, ABC Construction is only now experiencing financial challenges. The addition of the said protocol had added to the cost, hence affecting the financial status of the company.

CONCLUSION

This study investigated the operational dynamics of ABC Construction Incorporated in Pampanga before and after the lockdown. Utilizing a qualitative approach on a series of interviews and data analysis, the study has generated several significant insights such as industry-wide response to the COVID-19 pandemic.

Key Accomplishments

During the pandemic operation, there were notable changes in the company's level of efficiency. Manpower supervision had become more stringent resulting in more efficient operations and higher output quality. Of particular note was the finding that adding labor resources was not a guarantee to meet operational requirements; hence, the addition of labor resources should be strategically planned.

Protocol implementations

There was a notable variance in the implementation of protocols pre-pandemic and during the pandemic period. The pre-pandemic period featured a noticeable inconsistency, whereas the pandemic period saw significant adherence in line with health and safety norms, as stipulated by the official authorities. The company applied various strategies to maintain these norms, to prove its commitment toward conforming to these protocols which resulted in the company's evident adaptability and resilience in the face of exceptional challenges presented by these protocols.

Financial Aspect

The overall finance landscape for construction operations changed significantly during the pandemic. Costs for materials have increased substantially thanks to the added health and safety demands on makers and suppliers.At the same time, getting paid became more

of a challenge as customers' own financial stability took a hit during the pandemic. Add in all the usual added costs of sticking to the various health and safety laws and you can see how the pandemic ended up being a perfect storm of economic pressures for construction outfits.

Manpower Management

The management of manpower has been one of the central challenges that have surfaced in the wake of the pandemic in order to balance operational considerations and health and safety imperatives. Rigid movement restrictions have been enforced to ensure that the team adhered to health guidelines, indicating the organization's ability to safeguard its workforce in exceptional conditions.

Implications

The insights of this research are profound for the construction sector, highlighting the criticality of adoptability and innovation amidst disruptive events such as the COVID-19 pandemic. By prioritizing manning, enforcing compliance protocols and following prudent financial management practices, construction enterprises can minimize risks and optimise operational efficiency in an evolving environment.

Recommendations

Future research could further unpack additional dimensions of construction operations in a pandemic, such as the long-term effects of remote working arrangements, the extent to which technology-enabled solutions can enhance productivity, and the psychological toll of stressors over an extended duration for construction personnel. By broadening the scope of inquiry in this context, scholars can contribute to a more intensive understanding of the manifold challenges and opportunities that the construction industry faces when responding to global crises.

This study demonstrates the flexibility and adaptability of construction firms, who are able to leverage contemporary technology to conduct essential functions of design and construction while not in physical proximity, or the ability to collaborate on new protocols in jobsite preparation and layout. By embracing innovation, fostering collaboration, and prioritizing the health of the families of its workers and their own, construction companies can emerge from these difficult times more robust and resilient to meet future challenges, and thereby continue the necessary process of sustainable advancement of the industry.

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