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An empirical study of pre and post-covid scenario in the construction industry of India

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Abstract

An investment of ₹1 lakh in the construction sector contributes ₹1.5 lakh for the GDP and generates ₹3.2 lakh as total revenues. "Over 49 million people, that is, close to 12 per cent of nation's working population are employed by the construction sector. Hence, to expedite recovery from the economic impact of COVID is a must for the revival of the sector. The present study takes excerpts from KPMG study conducted by doing a survey to assess the cost impact of the COVID-19 pandemic on construction projects, considering essential aspects, such as manpower, plant and machinery, and material and their net impact on overall construction cost. More than 30 construction sector professionals took part in the survey that measured impact on different stages of the project. The study has surveyed 50 respondents in the city of Bengaluru drawn from both the organized and unorganized construction sector.

Keywords: Construction, GDP, migration

Introduction

After agriculture, the construction, infrastructure and real estate segments are the second-largest employment providers in the country. The infrastructure and construction sectors are highly responsible for propelling India's overall development and with intense the focus from Government for initiating policies that would ensure time-bound creation of world-class infrastructure in the country. In 2018, India ranked 44th out of 167 countries in the World Bank's Logistics Performance Index 2018. Foreign Direct Investment received in the Construction Development sector from April 2000 to June 2019 stood at US\$ 25.12 billion, according to the Department of Industrial Policy and Promotion.

The overall impact of the novel coronavirus, or COVID-19, on the construction sector in India has been estimated at Rs 30,000 crore per day, an analysis by KPMG revealed. The pandemic is also likely to reduce investment in construction-related projects by 13 to 30 percent, which is likely to impact the Gross Value Added and employment. The construction sector is driven by infrastructure projects to a large extent and it is expected to be hit severely by the current levels of uncertainty, dismal business, consumer sentiments, loss of income as well as the diversion of government funds towards management of the pandemic.

Construction industry during the lockdown

Construction-related GVA and employment are expected to reduce between 15 to 34 percent and 11 to 25 percent, respectively, when compared to pre-crisis projections for FY21. In the construction industry alone, migrant workers comprise a large part of the workforce and typically stay in labour colonies at construction sites. As per CREDAI, prior to the lockdown, there were around 20,000 ongoing projects across the country. The work was being undertaken in as many as 18,000 sites and more than 30 percent of workers were staying away from sites due to the fear of coronavirus infection. Together these projects involve a workforce of 8.5 million.

The 40-day lockdown in effect since March 25, which was further extended up to May 3 and subsequently to May 17, led to a reverse migration with workers leaving cities to return back to their villages. It is estimated that around 6 lakh workers walked to their villages, and around 10 lakh workers are stuck in relief camps. The latter are employed across multiple sectors.

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According to KPMG survey, the labour costs for skilled workers are expected to rise by 20-25 percent while that for semi-skilled and unskilled workers is pegged to increase by 10-15 percent. Projects that are under development are likely to take a severe hit with a minimum delay of two to three months, depending on their geography and spread of coronavirus in and around the project site, it said. Due to a delay in the construction period from the lockdown, there would be an additional interest cost on the working capital loans taken, which will be borne by the developers or contractors depending upon the risk sharing mechanism, it said. Revised standard operating procedures duly incorporating social distancing, personal protective equipment and hygiene would drive up project cost in the short term, it noted. The projects dependent on specialised equipment, electronics and specialised materials are more likely to be hit by disruptions to the supply chain largely due to the force majeure clauses.

Construction Sector in India Post Covid-19

The COVID-19 pandemic has brought the entire economy to almost a standstill. In the construction sector, COVID-19 pandemic has created disruptions in the regional, domestic, and overseas construction supply chain and resourcing including availability of labour, plant, machinery, materials, capitals and the like. With the easing of the lockdown, the revival of construction sector was a priority for the recovery from an economic impact standpoint of COVID-19. This is a unique, time bound opportunity for the economy to promptly respond and reset some of the baselines for the construction sector in India.

In reference to the pandemic, KPMG in India has released a report titled 'Reviving the construction sector in India post COVID-19'. Below are some key highlights from the sector that are critical for recovery of the overall economy:

- Total projects worth more than Rs 59,000 billion are under development, most of which would have been impacted severely by COVID-19.
- India's goal of becoming a US\$ 5 trillion economy rests on the construction of critical infrastructure under the National Infrastructure Plan.
- The Indian construction sector employs over 49 million people, close to 12 per cent of the nation's working population. Further, it has a multiplier effect on nearly 250 allied industries.
- A number of construction and developer organisations are supporting the essential needs of labourers at sites while the physical work progress is on a standstill. This is adding to the stress in the value chain of the construction industry.
- Construction productivity gets impacted during the monsoon period. Hence, time period until post-monsoon is a crucial window of opportunity to ramp up construction activity in the country. Initiated carefully with adequate safety measures, it can help prevent incremental economic impact.

Reviving the Construction Sector in India

KPMG in India recommends the below next steps to help make informed decisions and manage projects effectively, post COVID-19.

Prioritise Projects

Labour and capital can be expected to be in short supply once the restriction ends and therefore projects should be carefully prioritised over a 30-45 days window. Some key pointers for prioritisation include:

- Immediate and incremental impact assessment of COVID-19 on projects. Alignment of the project with the strategic intent, national priorities (example healthcare).
- Analyse interlinkages and dependencies on the success of other projects.
- Ability to generate immediate and sustained employment across value chain (labour, contractors, engineers, and others).

Re-visit project definition and delivery strategy

In a time-bound manner, project owners should chalk out a plan to minimise the impact of COVID-19, to ensure viability and sustenance of projects in a changed environment. Project owners should revisit strategic alignment of the project. Review labour availability (given migration and crop harvesting season will alter available pools of skilled/un/semi-skilled), anticipate crew sizing. Explore off-site, modular construction technologies to optimise time and resources, while enabling controlled working environment for labours.

Build resilience

A three-pronged approach can be used to address construction projects in the future:

Enhancing labour health and safety norms

- Strengthen guidelines for the stay of labour at site and enhance labour training curriculums to attune them with required safety precaution guidelines..
- Use appropriate digital technologies to enable timely detection and prevention of spread of illnesses (example vision-based analytics, thermal imaging, digital fencing, and the like).

Strengthening project governance

- Establish a high-powered task force to expedite project approvals, time bound settlement of arbitrations/disputes, resolve land acquisition issues to kick start stuck projects and prevent any further project delays.
- Undertake capacity building by setting up of independent, empowered project monitoring units to ensure timely and within budget projects.

Leveraging business continuity planning

Implement a business continuity plan including clear guidelines for critical project and organisation operations. Provide digital enabled environment for remote working including online project monitoring and the like.

Strengthen contractual provisions

Post COVID-19, the construction sector could consider the introduction of new clauses in future contracts, to set out clear guidelines for action and relief in extreme eventualities, and to minimise disputes that may arise at such a time

- Possibilities of contractual relief to be passed on by the project authorities and project owners to the contractors, sub-contractors and others.
- Setting out clear guidelines on facilities to be provided by contractor for workers, which need to be mandated by project owners in the contract.
- Implementation on integrated Project Delivery Framework, which is based on a joint contract between the key stakeholders within a project environment and share mutual risks and rewards, with an overall focus on successful project delivery.
- To give a perspective the construction sector is a key enabler for other sectors and it contributes to around 60% of the total investments that take place in India.

Construction Industry in India-An Overview

Even though the construction sector was in a slump between 2011 till 2015 with demand for construction equipment witnessed a complete collapse, the sector managed to grow post-2015 and the signs were good until the lockdown imposed across the country due to the COVID-19 virus outbreak. It is being believed that the coronavirus outbreak's impact on the infrastructure and construction segment is expected to be worse than that of the 2008 financial crisis-led economic slowdown. The imposition of Section 144 by state governments and suspension of public transport during the lockdown impacted manpower mobility and proved ineffective.

Post-Pandemic View of Construction Sites

The corona-driven pause is going to bring a difference in the way the industries function. The construction industry, too, is not aloof from the impact. A plethora of new enforcing factors will come into play, and the construction firms will have to abide by them. Though the Construction-from-home concept is still a contentious topic and mostly shunned, increasing digitalization is a silver lining for the industry. It's ironic that the industry that always sticks with the traditional approaches is now left with no option but to accept and welcome the digital tools to work. From a revamped focus on construction site safety to longer project delivery times and the increased influence of organized labor, the virus has overturned many facets of the industry.

Safer and Cleaner Construction Sites

It is a unanimous opinion that the emphasis on cleaner, less crowded work areas is one that will not recede even after the virus does. Construction firms will have to include a lot more health and safety measures so that employees are comfortable returning to work. They will be required to begin regular employee temperature checks, and top-to-bottom disinfections of sites, tools, and machinery. Construction firms will have to implement a variety of new protocols to promote employee health and social distancing, including a ban on carpooling, a 100% mask and glove policy, and a well-stocked hand washing station.

Distancing will stay for some time

There would be fewer group activities and more clearly defined procedures and protocols for even some of the most mundane work tasks. The need for maintaining distance has also changed the way contractors communicate with customers and with project teams and companies have

developed unique solutions to stay in touch. Though the outbreak is subsiding in many areas, there will be measures in place to mitigate risk on construction sites going forward. The contractors would resort to remote technology for inspections, a trend that will continue even after the health crisis is over. It is opined that 360-degree photos and videos would form the daily progress reports.

Extended Project Spans

Execution will now take a little longer because of lack of people in the construction sites. Besides, many of the major safety changes on construction sites will add to the time it takes to complete projects. While it is crucial to keep workers healthy, techniques such as suiting up with PPE, limited activities, and staggering work shifts will slow down progress, and the days of expediting a project may be over — at least for now.

It would be important for the contractors to consider time constraints when bidding out for new jobs. It should be made sure that the contract reflects a reasonable construction schedule. The entire project team, including owners, engineers, architects, and other partners, needs to understand that in the near future, projects will take longer than before to reach fruition.

Teleworking will become more common

With no option but to stay at home, many office employees will be running business operations via videoconferencing, emailing, and texting to stay in touch.

The Variety of Projects will Change

The coronavirus outbreak has remolded the types of projects that will be required this year and, perhaps, for many years to come. Retail, hospitality, and entertainment projects are likely to be in less demand while healthcare, construction and healthcare-related manufacturing projects could see more activity. Lower dependency on Chinese-made building products will create a surge of new indigenous manufacturing-and supply chain-related construction projects such as warehouses and factories.

Supply-Chain will recalibrate

Coronavirus has created a major global supply chain disruption, especially of goods from China. Builders may be required to deal with delays and shortages of items like steel, surfacing and case goods. Considering bidding out jobs, be wary of the contract clauses and suggest to include the clauses in the contracts that allow for as many as five backup sources for materials.

Adoption of Off-site Construction Techniques

An increased focus on worker safety will help accelerate the industry move to off-site construction methods. Prefabrication, for example, is believed to be a game changer for the construction industry. The process reduces the amount of time one is required to be in the field, keeping the manpower in a controlled environment, proving to be conducive from a health standpoint. The climate-controlled environment and assembly-line efficiency of factory production can reduce labor costs and condense project schedules, but the most important advantages like increased site safety, and reduced congestion will take center stage in post-pandemic construction.

Analysis and Interpretation of Primary Data

The primary data is collected from 50 sample respondents

who are operating in the organized and unorganized construction sector operating in the city of Bengaluru.

Profile of the Respondents

Variables	Frequency	Percentage
Age in years		
25-30	8	16
30-35	15	30
35-40	11	22
40-45	8	16
45 and above	8	16
Gender		
Male	41	82
Female	9	18
Type of Construction Sector		
Organised	39	78
Unorganised	11	22
Number of years operating in Bengaluru		
Less than 3 years	13	26
3-5 years	12	24
5-8 years	11	22
More than 8 years	14	28

8 respondents are in the age category of 25-30 years. 8 respondents are aged 45 years and above. The gender composition indicates that 82% of the respondents are male. 18% are representing female. More than three-fourth of the respondents are working in the Organised construction sector. 22% of the respondents are in the Unorganised construction sector.

The data regarding the number of years the respondents

operating in the city of Bengaluru reveals that 26% of the respondents are operating for less than three years. The representation across all the identified tenure is fair.

Hypothesis

Ho: There is no relationship between the Type of Construction sector and the Labour factors in the Covid scenario

Table 1: Influence of the Type of Construction sector and the Labour factors in the Covid scenario

		Sum of Squares	df	Mean Square	F	Sig.
Reduction of Employment	Between Groups	61.461	2	30.731	50.293	.000
	Within Groups	28.719	47	.611		
	Total	90.180	49			
Reverse Migration of Workers	Between Groups	69.706	2	34.853	60.954	.000
	Within Groups	26.874	47	.572		
	Total	96.580	49			
Optimisation Issues	Between Groups	75.363	2	37.682	69.136	.000
	Within Groups	25.617	47	.545		
	Total	100.980	49			
Precaution to prevent spread illness	Between Groups	25.153	2	12.577	66.666	.000
	Within Groups	8.867	47	.189		
	Total	34.020	49			

The Anova result shows the relationship between the Type of Construction sector and the Labour factors in the Covid scenario. The results of the sample respondents for the Type

of Construction sector differ significantly ($p < 0.05$) with respect to Labour factors in the Covid scenario.

Table 2: One-Sample Test Influence of the Type of Construction sector on the Contractual factors in the Covid scenario

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Revamping the existing contracts	17.826	49	.000	3.420	3.03	3.81
Difficulty in successful project delivery	16.218	49	.000	3.220	2.82	3.62
Ensuring the safe construction sites	14.678	49	.000	2.980	2.57	3.39
Protocols to promote health and social distancing	17.815	49	.000	3.460	3.07	3.85

The T-test result shows the relationship between the Type of Construction sector on the Contractual factors in the Covid scenario. The results of the sample respondents for the Type

of Construction sector differ significantly ($p < 0.05$) with respect to the Contractual factors in the Covid scenario.

Ho: There is no relationship between the Resuming of the construction work and Operational factors in the Covid scenario

T-Test Association between the Resuming of the construction work and Operational factors in the Covid scenario

	N	Mean	S.D.	Std. Error Mean
Risk Sharing in the construction contract	50	3.27	1.552	.220
Increased Project Costs	50	3.28	1.415	.200
Disruption in the supply chain	50	3.48	1.418	.200

The T-test results for the association between the Resuming of the construction work and Operational factors in the Covid scenario reveals that the mean scores range between

3.27 and 3.48. The S.D. ranged between values 1.41 to 1.55.

Table 3: Model Summary of the Resuming of the construction work and Operational factors in the Covid scenario

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.853 ^a	.727	.691	.469

a. Predictors: (Constant), Risk Sharing in the construction contract, Increased Project Costs, Disruption in the supply chain

The R² value (0.853) indicates that 85.3 percent of variations in the Operational factors in the Covid scenario have influenced in the set of all the independents variables included in the model.

Table 4: Coefficients of Resuming of the construction work and Operational factors in the Covid scenario

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-4.418	.887		-4.982	.000
Risk Sharing in the construction contract	-1.231	.533	-.842	-2.311	.030
Increased Project Costs	-.336	.256	-.276	-1.310	.000
Disruption in the supply chain	3.030	.572	1.798	5.301	.000

The results for the association between the Resuming of the construction work differ significantly (p<0.05) with respect to the Operational factors in the Covid scenario.

Recommendations

1. The Reserve Bank should undertake aggressive rate cuts and prioritise clearance of the pending projects (under implementation stage);
2. Create a one-time fund to expedite the completion of projects nearing completion (under development stage), which could act as quick win for reviving the economy.
3. Due to the lockdown, there has been considerable reverse migration to rural areas while many are also stuck in relief camps and labour colonies in the cities. Contractors or developers would have to create an incentive for labour now in the villages (in line with notifications by the government) to move beyond their comfort zones and return to work at project locations.

While the skilled people like carpenters, welders, fitters, plumbers, electricians and riggers may demand higher wages to the tune of 20-25 percent, general unskilled and semi-skilled labour could demand a 10-15 percent increase, it added.

Looking Ahead

Post-pandemic, the construction industry has seen a change. The marketplace has changed, as some national governments will be eager to invest in infrastructure to jump-start their recovery, and others may face new resource limitations. Portfolios have also changed, with both public- and private-sector project owners placing a new emphasis on sustainability and resilience.

Cities need to serve more residents who work from home - likely leading to greater investments in telecom and smart city initiatives. Among the many potential private-sector shifts on the horizon, commercial real estate may undergo a prolonged downturn, while the growth of data centres may

accelerate further. The competitive landscape will change too, as stronger players acquire weaker ones, and still others emerge from bankruptcy with clean balance sheets and a ravenous appetite for projects.

Conclusion

The lockdown has resulted in various infrastructure project sites staring at closure as it is mainly due to an effect on the labor movement due to the lockdown and also due to supply chain disruptions that may contract further as more states enforce COVID-19 lockdown. The fiscal situation in the construction sector for both the Centre and states is already worsening and continued funding of infrastructure capital expenditure will be a challenge in the near future. Additionally, all these problems will be further aggravated by the relief packages that are being rolled out by many states to support the loss of income caused by the lockdowns. This may further stress the government's ability to spend on the infrastructure over the next one or two years, further dampening the construction and the infrastructure segment.

The current real estate scenario with a large inventory of delayed and still unfinished houses would drive the buyers towards nearly completed projects, requiring the builders to put in much larger investments into their projects. Servicing these increased investments would create additional financial burden, which will necessitate completing the projects in the shortest possible time for them to be able to sell their properties to the buyers to generate resources. To minimise the construction time, use of construction technologies would be imperative. The technologies for modular construction, like precast systems, formwork systems, steel construction etc are already in vogue to some extent, but post Covid will become a norm.

Finance minister Nirmala Sitharaman recently announced that the state governments have been directed to use the welfare fund for building and construction laborers, which has around Rs 31,000 crore, to help those who are facing

economic disruption because of the lockdown. As per Anarock Property Consultants, more than 15.62 lakh units of housing and residential projects are under construction in the top seven cities of the country.

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