

“The sustainability aspects of the construction industry in crisis (Pandemic)”, A Review Paper

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ABSTRACT

“The planning of sustainability of any kinds is the key element of survival”; this is what the lesson Covid-19 has taught to all the businesses in pandemic. The widespread of covid-19 has a larger adverse impact not only on businesses but also on the lives of each individual and every living species. Such individual suffering has got negative hit to the labour intensive industry such as “Construction industry”.

A Construction industry has a major role to play in economy. The recession in this industry due to pandemic has brought many aspects to be highlighted such as No development in physical infrastructure, Suspension in existing projects, financial implications, investor’s no risk attitude etc. If industry continues to work in this pace, it will soon be vanished into the trap of bankruptcy with no employment for the professionals who are associated with this industry, apart from other social aspects.

Keyword: -Covid-19, Sustainability, Pandemic, Construction industry, Economy

1. INTRODUCTION

An unforeseen virus with unprecedented impact across all industries has become a serious matter of discussion, precisely when WHO had declared Covid-19 as a pandemic. Since the impact of this virus was unknown, the consequences were unimaginable to the extent of life threatening disease. Such increase in impact raised the bar of deaths across globe. This virus was originated in China and got spread across all the nations and continents. This virus did not spare any country whether it is developed, developing or a poor country.

If we measure the impact of covid-19 on construction industry, we can say that this is the only industry where the WFH (Work from Home) approach is not at all suitable approach to complete the tasks. This is the major challenge which had to be addressed to save the industry from serious consequences. Most of the governments during pandemic had implied mandatory lockdown which stopped the entire operations right from the supply to the end-user product or delivery on inventory. Although this lockdown was in a good intention in the interest of public health, the impact was such that labours who were on daily wages had to suffer with hunger and no capacity of sustainability.

Thus, by considering the overall impact of pandemic it is utmost necessary to investigate the pain points and to have a plan of sustainability towards everyone’s survival. The government, public and private authorities can come together under roof of CSR (Corporate Social Responsibilities) to offer their contribution to revamp the industry.

2. AIM & OBJECTIVE OF PAPER

This is with reference to the information available and gathered in view of current pandemic situation and to address its repercussions. Following statements pops-up with the glimpse of the project.

1. To understand the repercussions and findings of the pandemic on the construction industry with the help of multiple sources such as literature reviews by using journals, newspapers, government’s press releases, newsletters, Facebook handles, informative websites etc.
2. All the efforts have put together in the best interest of designing and planning an appropriate survival plan for the construction industry for the current and post pandemic situations. To achieve so, the questionnaire was designed and shared with the builder, supplier, labor and customer to understand their views on the situation.

3. METHODOLOGY

This research is consolidation of multiple aspects and areas these efforts were taken in context of showcasing Research methodology this consist of creating a Questionnaire pertaining to survey, Physical Site visit, Capturing the site visuals (photos), Thorough observation of onsite activities, Exchange of verbal information with construction experts and industries practitioner, due diligence with the help of online analytical data, information for social media through verify hadal, Help of pestle analysis methodology to review the situation.

4. LITERATURE REVIEW

As per the author **Mercy Ogunnusi, Mansur Hamma-adama at.el**, this study suggests the construction industry have to reconsider the option of strict office work now that the pandemic has made it possible to "work from home." To increase productivity, professionals are expected to adopt cutting-edge technology. The risk presents both a challenge and an opportunity, which necessitates increased planning. In this study, they also stated that COVID-19 had a significant impact on the procurement of assets and the construction industry as a whole, as a result of the full and partial stoppage of works mandated by the authorities. As a result of the Pandemic's peak, some businesses may face serious difficulties, leading to collapse or going out of business. Most businesses have resumed operations around the world, with only minor disruptions to workflow and progress. Author has concluded the implementation of different techniques to virtual working (using technology tools) where appropriate, workspace management, and other design considerations & and reducing on-site work through the use of prefabricated elements.

The author **Yaser Gamil and Abdulsalam Alhagar**, has investigated and evaluated the effects of pandemic COVID-19 on the construction industry, both private and public. The most significant causes, according to statistics, are project suspension, labour effect and work loss, time overrun, cost overrun, and financial impact. In this report they also mentioned, The contractors are also inevitable to face legal issues due to the nonconformity of contractual terms which is caused by the suspension of the project and sudden fluctuation of material price.

The author **Abdullah Alsharif , Siddharth Banerjee at.el**, have findings which identified that the construction industry experienced a number of adverse effects. This included material delivery delays, shortage of material, permitting delays, lower productivity rates, cash flow-related challenges, project suspension, price escalations, and potential conflicts and disputes. Considering the number of difficulties, there were number of new opportunities which were noticed in the construction industry as a result of the pandemic.

The author **Tariq Al Amri1 , Manuel Marey-Pérez**, elaborate how the pandemic (Covid-19) has adverse impact on OMAN's economy, especially in construction sector along with its repercussions in supply of labour and raw material. It has also been noticed and experienced that the rate of construction has drastically declined due to near about 75% decrease in contract rate across middle-east during Mar-2020. (Mordor Intelligence, 2020)

The author **Dr. Khair Al-Deen Bsisu**, has focused on this study to highlight the effects of pandemic on Civil engineers along with their perception towards legal and economic consequences on their sector. Since a construction industry is he only industry where the physical presence is utmost important to address the challenges the come across, we have to find the ways by which engineers can work remotely without showing up physically. The strategies should be designed and executed by authorities to cope up with the situation. Moreover, the economic downfall has immensely affected the civil/real estate industry and hence civil engineers too. Reason why the sustainable plan should be made for the survival of civil engineers to keep them active in the business/industry. The shortage of engineers can create a big chaos if we don't preserve them when thing become normal and that would be the yet another challenge to address.

The author **Mr Mark Stride, Dr Subashini Suresh, and Dr Suresh Renukappa**, have carried out 13 construction professional interviews from 10 companies . A range of professionals who are employed in various positions ensuring a full scope of opinions were incorporated within this study to firstly understand what their experiences of Covid-19 are, how companies are adapting, what organizations are planning for the future and key learning points that could be adopted UK wide. They Concluded the Companies are prepared to help workers and the workplace in the short term because they already have processes in place for significant problems that arise in the workplace. In conclusion they also mentioned Long term plans to future proof the workplace and construction industry will now need to be designed to improve the adaptation of industry, knowledge management and employee welfare.

The author **Mengyao Fu and Huayu Shen**, have elaborated the covid-19 adverse impact on the energy sector and the declining graph of performance in the first quarter of the year-2020. This adverse impact has drastically shrunk the productivity at work which reflects on overall revenue too. The companies have failed to manage the fixed and

operative costs/expenses. This has even forced to have an unforeseen increase in Risk. So, considering all negative impacts and declining graphs in terms of revenue, the decision-makers and other governance authorities should intervene to offer a sustainable plan for survival at the macro-economic level. This could have a probable variant of providing subsidies to assist essential services to not to go down. By doing this, the necessary supply of energy can benefit interdependent businesses to continue to work. Subsequently, at the firm level, managers MUST work on reducing operating and other miscellaneous expenses. At the leader’s level, they MUST work on mitigating the potential risk factors and optimize the subsidy to the maximum level. Furthermore, at the individual level, the rebalancing of portfolios by the investors has also become so essential

The author **Alina Ilinova , Diana Dmitrieva and Andrzej Kraslawski**, This research is based on fertilizer companies. The performance and the revenue generation model of smaller companies have changed with the way they compete on the marketplace. The fertilizer industry got affected with the slowness in “food chain and supply industry”. Despite of that, the demand was addressed by the increasing use of fertilizers in crop production. It was well estimated that the farmers would be able to produce only 50% of the current global food output in absence of mineral fertilizers. Nevertheless, different fertilizer companies of different countries must be carrying their own characteristic and efficacy.

5. RESEARCH GAP

After having a closer look at various literatures, we found the scarce availability of literature describing the thorough details of “an impact of pandemic on construction industry”. This triggers and deeply encourages **to do** further research. Furthermore, there are insufficient questionnaire available to find out the factors affecting the construction industry.

6. QUESTIONNAIRE DESIGN

We have prepared the questionnaire here, by referring various literatures in context of determining the impact of covid-19 on construction industry. This questionnaire contains the viewpoint of people who are closely tied up with the construction industry such as Builder, Supplier, Labour and Customers. To have the ease of understanding to the concerns, the google form was created with the probable answers which have to be marked by the Builder, Supplier, Labour and Customers. This is how the data is being collected in more structured manner by sending through online channels as well as by doing the field survey physically.

Category 1: Builder point of view

SR.NO.	QUESTIONS
1	Has Covid-19 impacted your business by any means since it got detected in India?
	[1] Yes
	[2] No
	[3] Partially
2	How did it impact your functional flow & daily operations?
	[1] No progress at site
	[2] Less progress at site
	[3] No impact
	[4] Material availability at site but no labour
3	How did you manage your labour workforce as majority of people chose to go back to their hometown to avoid infection?

	[1] We convinced labours to stay at site , provided food made advance payments so that they could send it across to their homes, made medical checkups twice a week, sanitization of labour camp and site mandatory, also made sports equipment like volley ball, carroms and other games available in the labour camp.
	[2] We are currently working with local labour and also we are going to train them like skilled labour.
	[3] By increasing their PayScale and by offering job security
	[4] By educating them with proper guidelines to not to get infected with virus
4	Did it have any impact on sales & subsequent payment receivables from the customers? Plus, did you approach for any extra credit period from the supplier for the payment?
	[1] When there is no movement at all , the sales was badly hit we had to totally depend on the electronic payments modes which was fairly available, we had to request all the suppliers to be give us more time for payments , even they were aware of the situation so not very hard to convince them.
	[2] Sales is almost drop up to 50% and because of lock down and in covid people are not interested to invest money in construction and other issue is supplier also refuse to credit.
	[3] Got support from supplier as well as from customer
	[4] No impact
5	How did you manage the financial aspects in view of budgeting?
	[1] We had approached the financial institution, who help us to cope up with the crisis.
	[2] Investor lobby is supporting us (we are offering profit % in project)
	[3] By opting for crowd funding option and by approaching angel investors
	[4] No impact on budget planning
6	How did you manage the workings during initial Lockdown which became intensified in 3rd & 4th quarter of year 2020?
	[1] We had to make more arrangements at the labour camp so that the labours daily movement from one site to another would not happen , they would stay on site and work which helped in curbing the transmitting of virus.
	[2] We allow to stay labour at site in labour camp and another thing we have sufficient stock of material during lockdown of 2020.
	[3] By spreading awareness among labours to not to get infected with virus to have no impact on project.
	[4] by minimizing expenses at the initial level only.
7	Did you have to cutdown on employee salaries?
	[1] Yes
	[2] No
	[3] Partially
	[4] offered salary plus greater facilities to stand with labours to retain their availability at site.
8	What initiatives did you take to attract customers to develop the interest in purchase? Did it help you to roll back to the business?

	[1] We had to rely on tele marketing, media, newspapers, also had to make referral schemes more attractive to roll back in to business, heavy discounts and price cuts too had to be implemented. We got reasonable response.
	[2] We offered scheme for customer I.e. tax free purchase like no stamp duty no registration fee no GST . Yes it's worked.
	[3] Digital marketing e.g. Facebook, Instagram, YouTube, google ads etc. Yes it's worked.
	[4] Traditional and digital marketing but no satisfactory response.
9	Since covid has taught us things to do online in terms of business activities, are you going to plan for similar things for your back-office staff & if yes, how?
	[1] we have already implemented online meetings , sending photos , showing them the site live through CCTV cameras etc.
	[2] Yes....We can do things such.....Every labour should have bank account (for weekly payment).....Put CCTV cameras on site for almost every activities so we can super wise on labour from office (labour can stay at site during lockdown so work must go on)
	[3] 30% online rest all as before
	[4] No change in working style
10	Will you be asking for subsidy from the government to sustain in the business during this tough business time?
	[1] Yes in social aspects.
	[2] No.
	[3] Yes in monetary aspects
	[4] Got support from the Govt. with extra FSI and reduction in stamp duty charges.
11	What measures did you take for labours to work without having a fear of getting infections at work?
	[1] By offering medical and other necessary facilities.
	[2] We manage to build awareness about wearing of mask in labour also about sanitizing and social distanceWe provide them healthy food at site. Like seasonal fruit and milk, chicken etc....We provide medical insurance to them so they feel secure about financial problem if they get infected by covid in future .
	[3] By offering job security with no reduction in wages.
	[4] No measures.
12	At present, what is the status of your business, Is it back to normal or still struggling to rollback?
	[1] it's a 50- 50 situation as the pandemic is not over and the lockdown is making us to struggle more to be in business.
	[2] Business is still suffering from financial and labour problem all due to covid
	[3] No negative impact
	[4] Planning to close down the business in case things don't recover soon.

Category 2: Supplier point of view

SR.NO.	QUESTIONS
1	How did you cope up with the Lock down situation?
	[1] by offering increased credit period
	[2] Minimizing expenses
	[3] Less imports
	[4] Stock the inventory and gain the competitive advantage
2	What all difficulties have you faced during this Covid19 situation?
	[1] Transportation and labour problem
	[2] Payment collection problem
	[3] Less inventory of material
	[4] Delayed banking facilities which caused cash flow management and delay in investment loan
3	How did you balance the demand and supply situation?
	[1] Completely balanced
	[2] Partially balanced
	[3] Did not balance
	[4] Still struggling
4	Even after Cash Flow being disturbed, what efforts were made to face the situation and also the competency?
	[1] By obtaining commercial loan
	[2] Longer credit period from manufacturer
	[3] Advance payment from customer
	[4] By maintaining quality of goods
5	The Inflated material rates has caused a major havaoc for the Industry , how was the situation catered and the competency?
	[1] By taking help from the supplier's fraternity
	[2] By keeping less inventory
	[3] with the help of outsourced manpower
	[4] By minimizing expenses
6	How was the transportation of material Handled?
	[1] Delayed
	[2] In time
	[3] Delayed with prior intimation
	[4] No supply
7	How did you manage to stay afloat when there was no Labours available to load and unload material from vehicles?
	[1] Through labour supply agency
	[2] By retaining existing labour by providing extra payment
	[3] with 50% of total labour strength
	[4] completely stopped
8	What's your perspective of things becoming normal, as before?
	[1] No idea
	[2] Very soon
	[3] depend upon govt. response
	[4] 50-50

Category 3: Labour point of view

SR.NO.	QUESTIONS
1	Did Labour Stay at work or went back to their home town?
	[1] Yes
	[2] No
	[3] Partially
	[4] Left with the commitment of joining back as soon as the situation is back to normal
2	What arrangements were made to feed labours to their needs Like meal, veggies, milk etc.?
	[1] By giving them extra cash
	[2] Did agreement with catering services to supply directly to the labours.
	[3] By setting up a centralize kitchen in the labour camp.
	[4] No arrangements were required.
3	Was the necessary arrangement been made to send the labours to their hometown when the lockdown was imposed?
	[1] Yes
	[2] No
4	Did the company /contractor make necessary provision for labours to send money to their families during lockdown, as banks were closed?
	[1] Yes, we did
	[2] No, we did not do
	[3] Partially
	[4] Offered insurance facility
5	How were the arrangements made for Medical Check-up and sanitization at Labour Camp and Site?
	[1] Provided by company
	[2] Partially provided by company
	[3] Govt. guidelines were followed.
	[4] No arrangements
6	How did you manage to keep a check on the health of the Labours on site?
	[1] Weekly health checkup
	[2] By providing sanitization facilities
	[3] Immediate checkup of labour having covid symptoms
	[4] No medical facilities
7	How did company manage to make labours aware of covid-19 to be alert and careful while working on and off site?
	[1] We give them training's
	[2] We stick the awareness posters on premises
	[3] Our Engineers daily guiding them
	[4] No arrangements
8	Was the primary medical facility made available to the labours at site?
	[1] Yes
	[2] No

	[3] Offered first-aid medical box.
	[4] Quick availability of doctor.
9	In the free time during the lockdown what measures were taken to keep the moral up of labours?
	[1] We setup games on site
	[2] We provide LED screen onsite for watching movie
	[3] Arrangements of Yoga session
	[4] Arrangements of motivational session
10	What's your perspective of things becoming normal, as before?
	[1] No idea
	[2] Very soon
	[3] Depend upon govt. response
	[4] 50-50

Category 4: Customer point of view

SR.NO.	QUESTIONS
1	How was the impact of Covid 19 on your Life / Payments / Cash flow Etc.?
	[1] Large financial impact
	[2] Medium financial impact
	[3] No financial impact
	[4] Positive financial impact
2	Have you approached financing institutions to extend the time limit other than the moratorium period given by the RBI?
	[1] Yes
	[2] No
	[3] No loans
	[4] Cleared loan by selling assets
3	What was the reactions of yours, when Builder asked for payments in this pandemic situations?
	[1] Payment extension
	[2] Partial payment
	[3] Delayed with three to six months cycle
	[4] Regular payment
4	Is there any Tax / Interest rate reduction you get?
	[1] Yes
	[2] No
	[3] Waiting
	[4] Not sure
5	Are you going to approach the local authorities to give discounts in Property Tax Etc.?
	[1] Yes
	[2] No

	[3] Waiting
	[4] Not sure
6	Was there any delay in getting a property possession from the builder? If yes - what was the reason given by the builder?
	[1] No labours
	[2] Material unavailability
	[3] Lockdown
	[4] No transportation
7	What's your perspective of things becoming normal, as before?
	[1] No idea
	[2] Very soon
	[3] depend upon govt. response
	[4] 50-50

7. CONCLUSIONS

We have collected the data from Builders, Engineers, Labours and Customers for the Pune region and it is a continuous process. The construction industry has come across many challenges to manage the labour and other relevant aspects with cost. This triggers industry to opt for advance techniques to mitigate the challenges and to focus explicitly on planning. While gathering the information many challenges have come across such as Supplier availability in time, Follow-up for the appointment with the property builders, tackling the interaction with labour to speak in their language to have their feedback, Customer needs and expectations etc.

8. FURURE SCOPE

All the collected information will be used to predict and analyse the growth in the Construction industry and its economics. This will even assist in knowing the challenges and the probable solutions to cope up when things rollback to normal. This can even make everyone prepared to face such pandemic situation, if at all re-occurs in future.

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