



# **Implications of COVID–19 Outbreak on the Construction and Property Development Sector in the South-East Nigeria**

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## **Authors' contributions**

*This work was carried out in collaboration between both authors. Author UFI designed the study, prepared the field work and wrote the protocol, as well as the first draft of the manuscript. Author CNO managed the field survey, interpreted the data and managed the literature searches. Both authors read and approved the final manuscript.*

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## **ABSTRACT**

Pandemic like Covid-19 usually affects the productivity of man, let alone when there is a consequent total lock-down effect in the society. Construction and property development sector among others therefore is bound to suffer enormously since it involves the services of variety of labour force. The study therefore explores the implication and consequences of the Covid-19 outbreak on the construction and property development sector in the south eastern region of Nigeria. Data were collected electronically using field survey method of research design from the sampled respondents of building professionals in the area. Tau-b correlation method was adopted in the statistical analyses to determine the most commonly observed Covid-19 measures, most common vulnerable factors leading to spread and contraction of the pandemic in the study.

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Findings reveal that majority of the establishment in the area shutdown their operations according to the directive of the government; while about the three quarter of these establishments who were in active operations are observed as public owned corporations or projects. It is also discovered that hand washing, wearing of face mask and social distancing were mostly complied with. On the other hand, economic hardship, inflation, and difficulty in accessibility to fund noticeably affect the flow and progress of work projects. Despite the considerable compliance with the preventive measures, there is no significant relationship between conformity to social distancing and shut-down policy, and the volume of construction works in progress during the shut-down in the study area. In conclusion therefore, it is recommended that shut-down of economic activities should not be total but, in part and alternate form among the various sections of the economic activities within the society. Attention to the operations of the private construction and property development projects like in the and the public structure is also recommended for a more holistic arrangement, towards cushioning the effect of similar economic crisis occasioned by any pandemic like Covid-19 in general.

*Keywords: Construction and property development sector; COVID-19; shut-down; COVID-19 preventive measures and compliance.*

## 1. INTRODUCTION

Construction industry is a very critical sector of every national economy. As the highest employer of labor after the civil service commission, it influences significantly the condition of every national economy, especially in the developing nations like Nigeria [1]. Construction and property development activities promote circular flow of income, and contribute profoundly to the Gross Domestic Product (GDP); hence influencing significantly the national economy by implication of the position of the construction industry in a national economy. Thus, any condition that affects the general economy would have affected the activities of the construction industry. According to [2] Covid-19 outbreak grossly affects the world economy.

The Corona virus disease otherwise known as Covid-19 is a novel virus that is highly contagious and spreads very quickly; different from Influenza or SARS. It has proven to be capable of causing great health challenges which can cause great economic and societal disruptions. As at 11<sup>th</sup> July, 2020, according to Nigerian Centre for Disease Control (NCDC), Nigeria had the third highest number of infected persons after South Africa and Egypt.

This Covid-19 virus that belongs to the family of Corona viridian derived its name from Corona which represents crown-like spikes on the outer surface of the virus. Corona viruses (CoVs) basically cause enzootic infections in birds and mammals but in recent times, have shown the capability of infecting human beings as well. The outbreak of severe acute respiratory syndrome

Corona virus (SARS-CoV) in 2003, H5N1 influenza A, H1N1 2009 and more recently Middle East respiratory syndrome (MERS-CoV) have exhibited the deadly nature of Corona viruses when they infect humans. They cause both mild infection in the upper respiratory tract and also more serious lower respiratory tract infections [3].

According to the report of the WHO-China Joint mission on the corona virus (Covid-19) disease, the virus disease outbreak was confirmed in a city in the Hubei province of China called Wuhan. It started in December, 2019. Bats according to studies appear to be the reservoir of the virus though the intermediate host(s) are yet unknown. Just like SARS AND MERS – CoV, the mode of transmission is by spreading respiratory droplets produced by coughing, sneezing, talking or breathing [4,5]. The key symptoms are dry cough, fever and diarrhea.

The symptoms and signs of Corona virus disease (Covid-19) according to the World Health Organization (WHO) and the Nigeria Centre for Disease Control (NCDC) are fever, difficulty in breathing, cough, weakness, sore throat, headache, catarrh, chest/lungs pain, diarrhea and seizure. The list is not all inclusive and the severity of the symptoms ranges from very mild to severe. While Covid-19 transmission in children appears to be limited, older people have a higher risk of infection and serious illness from Covid-19. People who have chronic medical conditions like heart disease, diabetes, kidney disease, liver disease, lung disease, HIV, high blood pressure, asthma, sickle cell disease, cancer or weakened immune system from solid organ transplants and others are at more risk of getting and dying from Covid-19 infection. In the

period of Covid-19 outbreak, many sectors of the economy were affected negatively; and the construction works and the property development sector was not an exception. Many construction projects in Nigeria and around the world stopped due to various challenges arising from the outbreak of Covid-19. This is evident in the complaint against scarcity of production and property development materials for the manufacturing industries and property development sector respectively as a result of closure of national boarder and related economic crisis in Nigeria due to Covid-19 outbreak globally, [6].

Nigeria economy in general was largely affected by the outbreak of the pandemic even before the shut-down of business and movement within the country; especially when the international boarders and ports were closed down. Nigeria is known to have higher international transactions and importation business with China. Consequently, business link with china where the virus evolved was cut off hence; affecting grossly the economy of Nigeria as a nation.

According to [7], Covid-19 outbreak significantly disrupted the India construction industry in a variety of ways that spans from materials' supply and pricing to workers availability and project completion scheduling. Although there was already a tough time in the industry before the outbreak of the pandemic, the condition became worst after the toll of the pandemic on building industry in India. The government took a new measure to improve the condition of builders with the critical decisions being advisory to states to recognize covid-19 as a force majeure under real estate (Regulation and Development) Act, 2016 (RERA). Majority of the region in India did so, and extended the project registration of RERA registered projects by up to six months, thus giving builders a considerable breath of relief.

In another dimension according to [8], the impact of Covid-19 on the infrastructures and construction sectors in India has been extensive and damaging. Awareness on the existence of particular contractual entitlements on extension of time to completion, and for the payment of additional cost in relation to their projects was created. Since no two projects are exactly the same, he warned that such contractual clauses are likely to be subjected to certain conditions governing their operations; hence making it impossible to provide any generic solution for those involved in the construction sector.

The study according to [9] explained that legal implications of the pandemic outbreak among others vary from one country to country, and contract to contract. They discovered that Nigeria and many other governments are offering aids to persons and businesses that are negatively affected by the Covid-19 situation; such that even if one has no legal entitlement to compensation for adverse effect of the pandemic on the project, aid may be available to defray some of the implications. The United Kingdom through the construction leadership council, in responding to the unprecedented situation published a new site operating procedure (SOP); characterized by innovative and diverse use of technology in an exemplary manner which may change the course of construction, even after the extinction of corona virus [10]. Although modern procurement planning, necessity for virtual working and unique decision considerations exist, their study paves way for the development of additional contingency plan and new working strategies to minimize human contact situation at work places.

Nevertheless, the Nigeria government adapted from the World Health Organization (WHO) preventive measures on Covid-19 some measures that could slow down the spread of the disease. There is need therefore to investigate the level of compliance to the Covid-19 preventive measures in the construction and property development sector in the South Eastern Nigeria, as well as evaluate their affects on the economy of the sector in the study area. Hence, the study is aimed at evaluating the effect and response to Covid-19 outbreak in the construction and property development sector, towards a proactive work plan against similar consequences of such outbreak in future in Nigeria.

## **2. RESEARCH METHODS**

Field survey research design was adopted in the study to elicit information within the study area with the aid of structured questionnaire. Data obtained from the field are quantitative in nature for deductive reasoning towards arriving at solution to the problem of the study. Proportional approach was used to determine the sample size distribution of the constituent professionals in the industry; and a quota method adopted in allocating numbers of questionnaires to the various part of the study area. Due to precautions against the spread of the virus, systematic method of data sampling was

adopted to decide the respondents that will be administered with the instrument of data collection through electronic network system.

Mean and Kendall tau-b correlation were used to analyze the data. Kendall tau-b correlation is a non-parametric measure of the strength and direction of association that exists between two variables measured on at least an ordinal scale. The dependent variable on volume of construction works awarded to or completed by professionals in the construction and property development sector is a scale variable while; the independent variable which is the compliance to Covid-19 preventive measures (maintenance of social distance in workplaces) is an ordinal variable.

The hypothesis was tested at 0.05% level of significance. At 5% level of significance, reject the null hypotheses for test with probability estimate lower than 5% (0.05) and conclude that it is statistically significant; hence the  $H_A$  is accepted. Otherwise, we accept  $H_0$  at the 95% confidence interval when the probability estimate is above. Besides, the response options in the instrument were weighted as shown below:

Very high/Most often - 5 points, high/more often - 4 points, moderate/often - 3 points, low/less often - 2 points, very low/least often - 1 point. The

acceptance point for the items is 3.5 and any mean below 3.5 is therefore rejected, and regarded as not prevalent, and an unpopular view.

### 3. RESULTS AND DISCUSSION

Among the 34 targeted professionals in the built environment consisting of the Architects, Builders, Civil engineers and the Estate surveyors, 70.6 percent of them works in private firms while; 29.4 percent works in public establishments, as showed in Table 1.

According to Table 2, from the data gathered 46.7% of the establishment was actively in progress at work while 52.3% was closed down at work during the period of the Covid-19 pandemic in south eastern region of Nigeria.

Table 3 shows that as much as 94.1% of the respondents confirmed that compliance to the various measures against the spread of the pandemic helped in checking the pandemic while 5.9% taught otherwise. Further analysis revealed that among the various construction and property development projects that were still operating during the pandemic shut-down, public owned projects alone amount to about 78.6% of the entire projects that were ongoing.

**Table 1. Type of firm/establishment officially engaged with**

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Private	24	70.6	70.6	70.6
	Public	10	29.4	29.4	100.0
	Total	34	100.0	100.0	

Source: Ikechukwu and Odimegwu Field Survey Work, (2020)

**Table 2. Status of the working condition of the establishment during the covid-19 outbreak**

		Frequency	Percent	Valid percent	Cumulative percent
Valid	yes	14	41.2	46.7	46.7
	No	16	47.1	53.3	100.0
	Total	30	88.2	100.0	
Missing	System	4	11.8		
Total		34	100.0		

**Table 3. Compliance to various measures against COVID-19 helps in curbing the spread of COVID- 19**

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	32	94.1	94.1	94.1
	No	2	5.9	5.9	100.0
	Total	34	100.0	100.0	

Source: Ikechukwu and Odimegwu Field Survey Work, (2020)

**Table 4. The response levels of the attitudinal factors in human’s vulnerability to COVID- 19**

		<b>Rank Handshake/body contact on the basis of its responsibilities in human’s vulnerability to Covid-19</b>	<b>Rank Closeness in Distance on the basis of its responsibilities in human’s vulnerability to Covid-19</b>	<b>Rank Living together on the basis of its responsibilities in human’s vulnerability to Covid-19</b>	<b>Rank Sharing of items on the basis of its responsibilities in human’s vulnerability to Covid-19</b>	<b>Rank Working together on the basis of its responsibilities in human’s vulnerability to Covid-19</b>
N	Valid	34	34	34	34	34
	Missing	0	0	0	0	0
Mean		4.4118	4.3529	4.0000	3.7059	3.7647
Minimum		1.00	3.00	3.00	1.00	2.00
Maximum		5.00	5.00	5.00	5.00	5.00

Source: Ikechukwu and Odimegwu Field Survey Work, (2020)

**Table 5. The measures against the spread of COVID-19 taken in places of work during the pandemic outbreak**

		<b>How often has regular hand washing led to disruption at work places in construction and property development projects at various levels due to Covid-19 outbreak</b>	<b>How often has wearing of nose masks led to disruption at work places in construction and property development projects at various levels due to Covid-19 outbreak</b>	<b>How often has social distance led to disruption at work places in construction and property development projects at various levels due to Covid-19 outbreak</b>	<b>How often has regular check for symptoms of Covid-19 led to disruption at work places in construction and property development projects at various levels due to Covid-19 outbreak</b>	<b>How often has self isolation after contact with known case led to disruption at work places in construction and property development projects at various levels due to Covid-19 outbreak</b>
N	Valid	34	34	34	34	34
	Missing	0	0	0	0	0
Mean		2.4706	2.7059	2.5294	2.8235	1.9118
Minimum		1.00	1.00	1.00	1.00	1.00
Maximum		5.00	5.00	5.00	5.00	4.00

Source: Ikechukwu and Odimegwu Field Survey Work, (2020)

**Table 6. The factors that lead to disruption at work places in construction and property development projects at various levels due to covid-19 outbreak**

		<b>Restriction in movement - The following factors that lead to disruption at work places abound in construction and property development projects at various levels due to Covid-19 outbreak</b>	<b>Sourcing of labour and materials - The following factors that lead to disruption at work places abound in construction and property development projects at various levels due to Covid-19 outbreak</b>	<b>Access to fund - The following factors that lead to disruption at work places abound in construction and property development projects at various levels due to Covid-19 Outbreak</b>	<b>Economic hardship - The following factors that lead to disruption at work places abound in construction and property development projects at various levels due to Covid-19 outbreak</b>	<b>Inflation - The following factors that lead to disruption at work places abound in construction and property development projects at various levels due to Covid-19 outbreak</b>	<b>Delay due to Social distancing -The following factors that lead to disruption at work places abound in construction and property development projects at various levels due to Covid-19 outbreak</b>
N	Valid	34	34	34	34	34	34
	Missing	0	0	0	0	0	0
	Mean	2.7941	2.9118	4.0294	4.4118	4.2059	2.0294
	Minimum	1.00	1.00	2.00	2.00	3.00	1.00
	Maximum	5.00	32.00	5.00	5.00	5.00	4.00

*Source: Ikechukwu and Odimegwu Field Survey Work, (2020)*

According to the Table 4, handshake/body contact has a highest mean response of 4.41, followed by closeness in distance (4.35), living together (4.00), working together (3.76) and lastly sharing of items (3.71). On the basis of scale value of 1 - 5, the mean values of all the factors ranked on average between High and Moderate on the basis of their responsibilities in human's vulnerability to Covid -19.

According to the Table 5, regular hand washing has a mean response of 2.47, wearing of nose masks recorded 2.70 while; Social distance has 2.52, regular check for Covid-19 symptoms has 2.82 and Isolation after contact with known person has 1.91. These mean ratings show that these Covid-19 preventive measures are less often complied with at the construction and property development sites during the pandemic period.

As shown in Table 6, Restriction in movement, Sourcing of labour and materials, and Access to funds recorded mean responses of 2.79, 2.91 and 4.03 respectively while Economic hardship, Inflation, and Delay due to social distancing have mean responses of 4.42, 4.21 and 2.03 respectively. Economic hardship, inflation, and access to funds led to high disruption of work progress at construction sites due to Covid-19 outbreak; while sourcing of labour and materials, restriction in movement, and social distancing led to low disruptions at work sites.

From the available data, it is further understood that 81.2% of the sampled opinions affirmed that work flow and progress in the study area were affected negatively during the outbreak of the pandemic; while the rest of 18.8% of the respondent disagreed. In another dimension, 82.4% Of the respondents confirmed that a strong relationship exists between rate of construction and property development works and the general economy in the society before,

as well as during Covid-19 periods; while 17.6% believed that the relationship only exists before the outbreak of the pandemic.

The result of the analysis however shows that there is no significant relationship between conformity to the social distancing and shut-down policy and volume of construction works in progress in the study area (r=0.110, P-value=0.462).

### 3.1 Discussion

In an effort to examine the condition of construction and property development sector as well as evaluate the implication of Covid-19 outbreak on the sector in the south eastern region of Nigeria, it was discovered that 70.6 percent of the sampled building professionals works in private firms while; 29.4 percent works in public establishments.

Findings show that slightly above 50% of both the private and public establishments were hindered from active operations by the outbreak of the pandemic and its consequent shutdown directive. Consequently, about three quarter of the volume of the ongoing projects are public owned projects; while almost all the construction and property development professionals in the area confirmed that compliance to the various measures against the spread of the pandemic helped in reducing the spread of the pandemic.

Among the various factors involved in spread and contraction of the pandemic, handshake/body, closeness in distance, and living together rank respectively as the most common means of contaminating the pandemic. Regular hand washing, wearing of nose masks, and social distancing as the common preventive measures in checking the spread of the pandemic however are mostly observed respectively at work places.

**Table 7. Relationship between level of compliance with social distancing and shut down policy, and volume of works in progress in the study area**

			Trans vol of jobs	Trans social distance
Kendall's tau_b	Trans vol of jobs	Correlation Coefficient	1.000	.110
		Sig. (2-tailed)	.	.462
		N	34	34
	Trans social distance	Correlation Coefficient	.110	1.000
		Sig. (2-tailed)	.462	.
		N	34	34

Source: Ikechukwu and Odimegwu Field Survey Work, (2020)

The severity of the consequence the of the outbreak which incapacitated some of the firms in the sector explained that economic hardship, inflation, and access to funds led to high disruption of work progress at construction sites respectively than others in the study area. Hence, this development affected negatively the flow and progress of works during the outbreak of the pandemic. The study however shows no significant relationship between volumes of construction work in progress and the rate of compliance with the preventive measures against the pandemic in general.

#### 4. CONCLUSION

The study emphasizes the importance of conformity to norm and conditions designed for the benefit of the society; most critically when it is an issue of life. It however becomes very challenging and contradictory when the very source of maintaining the life sought to protect is truncated. Although the compulsory shut down of activities in the society was to stem the spread of the virus, it led to economic hardship, inflation and lack of funds; and will continue to have multiplier's effect on the economy. Considerable compliance with the preventive measures however goes a long way in managing the pandemic given the reason the spread of the virus was reduces. This is evident in the approach of some of the construction and property development establishments who against the shut-down policy were going on with their respective activities; while observing most of the Covid-19 measures. Nevertheless, no significant relationship between conformity to social distancing and shut-down policy and volume of construction works in progress exists in the study area.

It is therefore worthy of note that total shut down has not helped much in managing the pandemic but, the conformity to the norms and most of the Covid-19 measures. In view of this finding, the shut-down of economic life should not be total but, should be in part and be regulated within the various sections of economic activities within the society to avoid sudden break down of economic activities, anarchy, hunger and death.

The construction and property development sector is one of the major agents of economic circulation and regeneration. Work flow and progress in this sector was affected in the study area due to the shutdown directive. That notwithstanding, just as the challenges of the

shutdown override its benefits on the economy, the benefits of the activeness of some of the construction and property development establishments override the effect of their violation on the shut down directive by the government.

Considering the position of the sector in national economy, a strategic and holistic arrangement is ideal to give a special attention to construction and property development sector in its operation towards helping to cushion the effect of such economic crisis that might arise from similar development like Covid-19. The private establishments therefore should be considered just like the public owned establishments in this service that is termed 'essential' in the study, by granting them freedom of movement and operation as long as they comply with the stipulated preventive measures set out by the government authority.

#### CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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