

Impact of COVID-19 Pandemic on the Procurement Process of Public Construction Projects in Kaduna, Nigeria

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Abstract

The emergence of the COVID-19 pandemic world over serves as a major threat to the successful completion of the procurement process. This has adversely affected the timely completion of the procurement process, resulting to delay in the completion of construction projects in Nigeria. This study evaluated the impact of COVID-19 pandemic on the procurement process of public construction projects in Kaduna. The study adopted the quantitative research approach. Data were collected using structured questionnaire administered on 70 professionals in Federal Ministry of Works, Kaduna. Relative Importance Index (RII) was used for data analysis. The study revealed that the procurement activity most likely to be affected by COVID-19 pandemic is: "Tender opening information" (RII = 0.90); the most significant impact of COVID-19 pandemic on the success of the procurement process is "Delays in procurement process" (RII = 0.91); and the most effective strategy for enhancing the timely completion of procurement process amidst the wave of COVID-19 pandemic was "Implementing public health measures" (RII = 0.89). It was concluded that the impact of COVID-19 pandemic on the procurement process of public construction projects in Kaduna, Nigeria is significant. The major recommendation from the study was that Government should develop a mechanism for enhancing the timely completion of procurement process amidst the wave of COVID-19 pandemic or related world health issues in public construction projects using the components of the strategies proposed in this study as a basis.

Keywords: COVID-19 pandemic; Impact; Procurement process; Public construction projects

Introduction

The Corona Virus Disease 2019 (COVID-19) has impacted infrastructure projects around the globe in all sectors. There were disruptions not only to operational projects, but also to the planning, preparation, and procurement of construction projects. Projects were delayed, cancelled, and restructured. Changes to customer demand and attitudes are forcing a shift in infrastructure needs, making governments and investors revisit priorities and look

more closely at issues of resilience, sustainability, and inclusion in construction projects' procurement and design processes (World Bank Group, 2020). COVID-19, social distancing, self-isolation, quarantine, furlough, palliatives, and many more emerged as the new vocabularies of the entire world, construction industry not excluded. It is precisely a decade from the last pandemic experienced by the human race. However, the most popular disease outbreak called COVID-19 was announced,

which hit all the nations of the world within four months and was declared a pandemic in March 2020 (Ogunnusi *et al.*, 2020). This outbreak disrupted businesses around the globe, including built asset procurement and facility management. The United Kingdom, through the Construction Leadership Council in 2020, for instance, in responding to this unprecedented situation, published a new Site Operating Procedure (SOP). The effect of this pandemic in these extraordinary times posed both positive and negative impacts in the Architecture, Engineering and Construction, Owner and Operator (AECOO) industry as well as the procurement process of construction projects (Ogunnusi *et al.*, 2020). Its effect has brought about innovative and diverse use of technology in an exemplary manner which may change the course of construction even after the extinction of coronavirus.

Prior to 2007, Nigerian public procurement was not formally regulated, in the sense that there was no law governing procurement at the federal or state level. This changed with the enactment in 2007 of the Public Procurement Act (Williams-Elegbe, 2015). This act was passed on the recommendation of the World Bank, which had conducted a country procurement assessment report on Nigeria in 1999. As in most developing countries, the World Bank was the driver behind public procurement reform in Nigeria. Therefore, the Nigerian government enacted a Public Procurement Act (PPA) in 2007 to govern public procurement by federal agencies (Olatunji *et al.*, 2016). The PPA was best on world best practice. The goals of public procurement regulation therefore helped to achieve the adoption of specific best practices by ensuring competition, transparency, integrity, best value and efficiency in the procurement process in Nigeria (ISO 10845). Unfortunately, the emergence of the Corona Virus (COVID-19) pandemic in the last quarter of 2019 serves as a major threat to the successful completion of the procurement process. This is because there was a total lockdown of all business activities including

construction in 2020 for a long period. Since the outbreak of the COVID-19 pandemic, according to Bureau of Public Procurement (BPP) (2020), global socioeconomic activities have practically ground to a halt and this has affected the revenues from oil resources, taxes and other streams. It is sad to note that Nigeria was not spared and this has adversely affected the Nation's capacity to implement the 2020 Appropriation Act. This also affected the process of the procurement of public projects in Nigeria.

In addition, according to Ogunnusi *et al.* (2020), COVID-19 has disrupted global activities across all economic sectors and the construction industry. The disruptions are largely due to the lockdown measures adopted and implemented by countries globally as a health strategy to mitigate the impact of the pandemic's spread on the human population (Ogunnusi *et al.*, 2020; PWC, 2020). Production halts, movement restrictions of people and goods, border closures, logistical constraints, as well as the slowdown of trade and business activities are fall-outs of the COVID-19 lockdown measures. These have adversely affected the timely completion of the procurement process and the result is delay in the completion of construction projects leading to cost and time overruns in public construction projects in Nigeria. It is therefore imperative to evaluate the impact of COVID-19 pandemic on the procurement process of public construction projects in Kaduna, Nigeria with a view to enhancing the timely completion of the procurement process. In order to achieve this aim, the study identified the activities in the procurement process likely to be affected by COVID-19 pandemic; examined the impact of COVID-19 pandemic on the success of the procurement process of public construction projects; and proposed strategies for enhancing the timely completion of procurement process amidst the wave of COVID-19 pandemic in public construction projects in Kaduna.

Literature Review

This section presents an extant review of related literature to the themes of the objectives of the study. This also assisted in identifying the main variables required for data analysis and achievement of the study's aim and objectives.

Activities in the Procurement Process Likely to be affected by COVID-19 Pandemic

Procurement processes for new construction projects experienced delays in different jurisdictions, and in some jurisdictions, specific suspension measures in respect of tenders were enacted, but many have since been restarted. In line with this, the World Bank Group (2020) reported that in just under 70 percent of the countries (Albania, Australia, Poland and Spain) surveyed, respondents confirmed that the COVID-19 pandemic had had an adverse impact on the procurement of new PPP projects. In Nigeria, the Bureau of Public Procurement (BPP) (2007) identified nine (9) basic activities as the essential activities for a successful procurement process. These are: Public notices of tendering opportunities; Tendering documents and addenda; Tender opening information; Tender evaluation reports; Formal appeals by bidders and outcomes; Signed contract documents and addenda and amendments; Records of claims and dispute resolutions; Record of time taken to complete key steps in the process; and Comprehensive disbursements data in relation to payments. According to Adebisi *et al.* (2010), the procurement process in Nigeria follows this sequence-advertisement in at least two dailies; pre-qualification, submission of bids; the opening of tenders; analysis and evaluation of tenders; negotiation and award of contracts; mobilization to the site; supply and installation; final valuation and payment.

In addition, Nwogwugwu and Adebayo (2015) reported that the need for good and efficient public procurement processes cannot be over emphasized. Apart from the fact that it ensures accountability and

transparency in the award of contracts and in government circles, it is also a catalyst for development. The quality, timeliness, suitability and affordability of those procured inputs can largely determine whether the public investments will succeed or fail. In view of this, the procedure for public procurement in Nigeria is clearly stated in section 24 of the Public Procurement Act as: 1. Selection of a method of procurement; 2. Preparation of the relevant procurement documents; 3. Pre-qualification of bidders; 4. Submission/receipt of tenders; 5. Evaluation of tenders; 6. Comparison of tenders; 7. Recommendation of the winning bid; 8. Certification of the procurement action; and 9. Award of contract. Security and Exchange Commission of Nigeria (2021) also reported that contracts in the Commission are awarded to Vendors in line with the Provision of the BPP Act, 2007. These provisions are: Needs assessment from requesting Unit(s); Authorization is sought from Management; Adverts placement soliciting for quotations/bids from interested Vendors is made; Receipt of quotations from interested Vendors; Bids Opening a. Bidders are notified of the date of the Bid Opening b. Relevant Stakeholders present will sign attendance register c. Examination and confirmation of Bid Document by Bidders; Evaluation of quotations by the Technical Evaluation Committee of the Commission, to ensure that the Bidders have Technical know-how to do the jobs they are bidding for; Report of Technical Evaluation sent to Tender's Board for approval of opening of Financial bids; Opening of Financial bids; Evaluation of Financial bids; Selection of the most responsive Bidder(s); Report from evaluation is sent to Tender's Board for approval of award to the successful Bidder; Communicate to the Bidders that lost in writing stating reasons for failure; and Issue letter of Award to the winner(s), which will contain deadline for execution of project.

Impact of COVID-19 Pandemic on the Success of the Procurement Process of Public Construction Projects

According to ILO (2021), the COVID-19 pandemic has devastated the world of work. Its impact, which varies across sectors, has been significant in the construction sector. In line with this, the World Bank Group (2020) reported that many countries, such as Spain, Albania and Poland, recorded initial delays in the procurement of new projects. Furthermore, Bailey *et al.* (2020) also emphasized that COVID-19 has a substantial effect on construction projects by slowing the procurement. It has also been established by COVID-19 Pandemic Emergency Project (2020) that the COVID-19 pandemic also led to the inefficiencies in work processes, combined with bureaucracy which may mean delays in implementation. In view of these review of literature, the impacts of COVID-19 pandemic on the success of the procurement process of public construction projects are summarized in Table 1.

These studies have revealed that the COVID-19 pandemic has generally resulted into volatile and unpredictable markets which have adverse effect on the shipment timeline. In addition, limited market responsiveness as manufacturers may be overwhelmed by orders and not interested in project's tenders.

Strategies for Enhancing the Timely Completion of Procurement Process amidst the Wave of COVID-19

Pandemic in Public Construction Projects

In the last few decades, countries have moved from the traditional system of centralized procurements, to a more robust system of decentralized procurements, with each spending agency carrying out its procurements. The decentralized system of procurements has resulted in the need for more skilled procurement personnel across governments (Simpson *et al.*, 2011). BPP (2020) reported that due to the imminent threat to lives posed by the COVID-19 pandemic and to ramp up the Nation's capacity to address this crisis, Public-Spirited Individuals and Corporate Organisations have made reasonable financial contributions to support the fight against this pandemic. In addition, some of our Development Partners have indicated willingness to provide budgetary support to enhance the implementation of the 2020 Appropriation Act in the face of dwindling revenue, particularly as it affects our response to the COVID-19 pandemic. In view of these facts, there is need for all procuring entities that will participate in procurements that respond to the COVID-19 pandemic to ensure transparency, accountability, probity and value for money in their procurement proceedings. This is because the procurements to be executed in response to the COVID-19 pandemic will generally fall under Emergency Procurement Method instead of the default Open Competitive Bidding Method.

Table 1: Impact of COVID-19 Pandemic on the Success of the Procurement Process of Public Construction Projects

S/No.	Impact of COVID-19 Pandemic	Source(s)
1	Shortages of raw materials and other inputs	Bailey <i>et al.</i> (2020); ILO (2021)
2	Project delays	Bailey <i>et al.</i> (2020); World Bank Group (2020)
3	Delays in procurement process	COVID-19 Pandemic Emergency Project (2020)
4	Increasing costs of projects	Bailey <i>et al.</i> (2020); ILO (2021)
5	Increasing costs of materials	Bailey <i>et al.</i> (2020); ILO (2021)
6	Labour shortages	Bailey <i>et al.</i> (2020); ILO (2021)
7	Suspension of tenders	Bailey <i>et al.</i> (2020); ILO (2021)
8	Mis-prioritizing of objectives	World Bank Group (2020)
9	Project abandonment	Bailey <i>et al.</i> (2020)
10	Volatile and unpredictable markets	COVID-19 Pandemic Emergency Project (2020)

ACAPS (2020) reported that many actions can be taken to mitigate these risks without undermining an adequate and appropriate government response to the public health emergency. The key drivers of these mitigation measures might be policymakers, civil society, journalists, oversight institutions or the impacted government agencies themselves (or most likely, some combination of these actors). Past studies have identified both short- and long-term actions that can be taken – either through direct government initiative or encouraged through civil society advocacy – to ensure the integrity and accountability of public officials, protect democratic institutions and ensure that COVID-19 responses are effectively protecting communities (Arcadis, 2020; Construction Leadership Council, 2020; Construction Manager, 2020; Hook, 2020; Ogunnusi *et al.*, 2020; WHO, 2020; Agarwal *et al.*, 2022).

On a general note, ACAPS (2020) stated that since mid-March the Government of Nigeria has put in place several measures to prevent, mitigate, and respond to the spread of COVID-19 across the country. These include lockdowns, movement restrictions, social and physical distancing measures, as well as public health measures. The distribution of cases is uneven and has resulted in a diversified response from the federal government. The degree of implementation and level of compliance from the population varies from state to state; this is related to perception of the government and trust in government directives, and different levels of education and sensitisation to the measures. In addition, Anyanwu *et al.* (2020) reported that the application of social distancing, personal hygiene, especially hand hygiene and mask-wearing, as practiced in many countries, has proven to be effective to reduce the spread of COVID-19. In Nigeria, social distancing, in many instances, may be impracticable, given its large population, and a high density of people living in crowded conditions like slums and camps.

Methodology

This study adopted a quantitative research approach. Quantitative research involves data generation in a quantitative form which can be subjected in a formal and rigid fashion to rigorous quantitative analysis. In view of this, the use of structured questionnaire was employed to collect data. Analysis of data was undertaken with the use descriptive statistical techniques. The population for the study is comprised of 85 professionals in the Kaduna State Ministry of Works that are usually involved in the procurement process of public construction projects. The sampling frame for this study was made up of construction professions in Kaduna State Ministry of Works that are usually involved in the procurement process of public construction projects. These professionals are Architects, Builders, Civil Engineers, Electrical Engineers, Mechanical Engineers and Quantity Surveyors. The sample size for this study is 70 because according to Krejcie and Morgan's (1970) Table, the sample size for a population size of 85 is 70.

The study adopted the stratified sampling technique. Stratified sampling is a common procedure in sample surveys. The procedure enables one to draw a sample with any desired degree of representation of the different parts of the population by taking them as strata (Goel, 2014). In stratified sampling, the population consisting of N units is first divided into K sub-populations of N_1, N_2, \dots, N_K units respectively. These sub-populations are non-overlapping and together they comprise the whole of the population (i.e., $\sum_{i=1}^K N_i = N$). In view of this, and for the fact that the sampling elements (respondents) are in strata of different professions, this study adopted the stratified sampling technique.

The structured questionnaires used for data collection were administered on 70 professionals at a response rate of 50%. The questionnaire was designed on a five – point Likert's scale format. The questionnaire was made up of four sections. The first section addressed issues relating to the profile of respondents. The other sections addressed

matters concerning the research objectives respectively. The use of frequency counts and percentage were employed to present the data collected on respondents' profile. In order to achieve the objectives of the study, the use of Relative Importance Index (RII) was adopted to rank the perception of the respondents on the rate of likelihood of the activities in the procurement process likely to be affected by COVID-19 pandemic; level of significance of the impact of COVID-19 pandemic on the success of the procurement process; and the level of effectiveness of the strategies for enhancing the timely completion of procurement process amidst the wave of COVID-19 pandemic in public construction projects in Kaduna. RII values were calculated using the following formula:

$$RII = \frac{\sum W}{A \times N} \text{----- (1)}$$

Source: Kassem (2020)

Where: Σ = Summation, W = the weights of every one of the factors given by respondents and it was in the range of (1 - 5), (A=5) the largest value of weight (i.e., Highest factor) and finally N refers to the Total of number respondents.

RII is being ranked from 0.00 to 1.00 and they all have their decision rule used in this study as shown in Table 2.

Results and Discussion

This section presents and discusses the results of the data collected via the use of questionnaire from 35 respondents out of the 70 copies administered (i.e., response rate of 50%).

Respondents' Profile

This section presents the profile of respondents as shown in Table 3.

It was shown in Table 3 the group of respondents was dominated by Quantity Surveyors (65.71%). This was followed by Architects (22.86%), and Builders 11.43%. This indicates that Quantity Surveyors assume a very significant role in the procurement process of construction projects in Nigeria. It was also revealed that majority of the respondents were MSc holders (62.86%). This was followed by professionals who were holders of HND (17.14%); BSc (11.43%); and PhD (8.57%). As shown in Table 3, the range between 15-20years had the highest number of respondents with 51.42%. This was followed by the range of above 30years (22.86%); 20-25years (11.43%); and 25-30 years (14.29%). This study reflects that the majority of the respondents had the range of 15-20years, representing over a half of the total respondents. The profile of respondents also revealed that 57.14% of the respondents were registered members of NIQS; 22.86% were registered members of NIOB; 17.14% were registered members of NIA; and 2.86% were registered members of RICS. This shows that the respondents were registered members of their respective professional bodies. Generally, the profile of respondents indicates that the respondents were educated, experienced, knowledgeable and qualified enough to provide reliable information required for this study.

Table 2: Decision Rule for RII Analysis

Scale	Cut-off Point (RII)	Interpretation		
		Level of Significance	Degree of Proneness	Level of Effectiveness
5	0.81 - 1.00	Very Significant	Very High	Very Effective
4	0.61 - 0.80	Significant	High	Effective
3	0.41 - 0.60	Fairly Significant	Average	Fairly Effective
2	0.21 - 0.40	Less Significant	Low	Less Effective
1	0.00 - 0.20	Least Significant	Very Low	Least Effective

Source: Adapted and Modified from Shittu *et al.* (2021)

Table 3: Respondents' Profile

PROFILE	STATISTICS	
Profession of Respondents	Frequency	Proportion (%)
Architect	8	22.86
Quantity Surveyors	23	65.71
Builders	4	11.43
Engineers	0	0.00
Others	0	0.00
Educational Qualification of Respondents	Frequency	Proportion (%)
HND	6	17.14
BSc	4	11.43
MSc	22	62.86
Ph.D.	3	8.57
Others	0	0.00
Years of Experience of Respondents	Frequency	Proportion (%)
15 - 20 years	18	51.42
21 - 25 years	4	11.43
26 - 30 years	5	14.29
Above 30 years	8	22.86
Professional Body of Respondents	Frequency	Proportion (%)
NIA (Nigerian Institute of Architects)	6	17.14
NIOB (Nigerian Institute of Builders)	8	22.86
NSE (Nigerian Society of Engineers)	0	0.00
NIQS (Nigerian Institute of Quantity Surveyors)	20	57.14
Others (RICS (Royal Institute of Chartered Surveyors))	1	2.86
Total	35	100.00

Analysis of the Process of Procurement Activities Affected by COVID-19 Pandemic

The RII results of the process of procurement activities likely to be affected by COVID-19 pandemic is summarised in Table 4.

It was revealed from Table 4 that the procurement activities most likely to be affected by COVID-19 pandemic were "Tender opening information" (RII = 0.90) and "Comprehensive disbursements data in relation to payments" (RII = 0.89). The procurement activities least likely to be affected by COVID-19 Pandemic were "Signed contract documents and addenda and amendments (Award of contract)" (RII = 0.80) and "Record of time taken to complete key steps in the process" (RII = 0.77). On the average, the rate of likelihood of all the procurement activities public construction projects in Kaduna to be affected by COVID-19 Pandemic was very high (average RII = 0.85).

Analysis of the Impact of COVID-19 Pandemic on the Success of the Procurement Process of Public Construction Projects

The study identified ten (10) major impacts of COVID-19 pandemic on the success of the procurement process of public construction projects. The results of the RII analysis undertaken based on the perception of respondents on these impacts are summarised in Table 5.

It was revealed from Table 5 that the most significant impacts of COVID-19 pandemic on the success of the procurement process of public construction projects were "Delays in procurement process" (RII = 0.91); "Suspension of tenders" (RII = 0.86); and "Mis-prioritizing of objectives" (RII = 0.80). The least significant impacts of COVID-19 pandemic on the success of the procurement process of public construction projects were "Labour shortages" (RII = 0.43); and "Volatile and unpredictable markets" (RII = 0.42). On the average, all the impacts of COVID-19 pandemic on the success of the procurement process of public construction projects identified from the study were significant (average RII = 0.66).

Table 4: Procurement Activities Likely to be affected by COVID-19 Pandemic

Code	Activities Likely to be affected by COVID-19 Pandemic	Rank	RII	Decision
B3	Tender opening information	1	0.90	Very High
B11	Comprehensive disbursements data in relation to payments	2	0.89	Very High
B2	Tendering documents and addenda (Prequalification)	3	0.87	Very High
B4	Tender evaluation reports	4	0.86	Very High
B5	Formal appeals by bidders and outcomes (Negotiation)	5	0.85	Very High
B7	Mobilization to the site	5	0.85	Very High
B9	Records of claims and dispute resolutions	5	0.85	Very High
B8	Supply and installation	6	0.84	Very High
B1	Public notices of tendering opportunities (Advertisement)	7	0.82	Very High
B6	Signed contract documents and addenda and amendments (Award of contract)	8	0.80	High
B10	Record of time taken to complete key steps in the process	9	0.77	High
<i>Average RII</i>			<i>0.85</i>	<i>Very High</i>

Table 5: Impact of COVID-19 Pandemic on the Success of the Procurement Process of Public Construction Projects

Code No	Impact of COVID-19 Pandemic on the Success of the Procurement Process	RII	Rank	Decision
B3	Delays in procurement process	0.91	1st	Very Significant
B7	Suspension of tenders	0.86	2nd	Very Significant
B8	Mis-prioritizing of objectives	0.80	3rd	Significant
B4	Increasing costs of projects	0.74	4th	Significant
B2	Project delays	0.71	5th	Significant
B9	Project abandonment	0.66	6th	Significant
B5	Increasing costs of materials	0.55	7th	Fairly Significant
B1	Shortages of raw materials and other inputs	0.53	8th	Fairly Significant
B6	Labour shortages	0.43	9th	Fairly Significant
B10	Volatile and unpredictable markets	0.42	10th	Fairly Significant
<i>Average RII</i>		<i>0.66</i>		<i>Significant</i>

Analysis of the Strategies for Enhancing the Timely Completion of Procurement Process amidst the Wave of COVID-19 Pandemic in Public Construction Projects

The results of the strategies for enhancing the timely completion of procurement process amidst the wave of COVID-19 pandemic in public construction projects are summarised in Table 6.

The results presented in Table 6 revealed that the most effective strategies for enhancing the timely completion of procurement process amidst the wave of COVID-19 pandemic were “Implementing

public health measures” (RII = 0.89) and “Use of hand sanitizers” (RII = 0.87). The least effective strategies for enhancing the timely completion of procurement process amidst the wave of COVID-19 pandemic were “Imposing general and selective lockdowns” (RII = 0.78) and “Appropriation Act in the face of dwindling revenue” (RII=0.62). On the average, all the strategies for enhancing the timely completion of procurement process amidst the wave of COVID-19 pandemic in public construction projects in Kaduna were very effective (average RII= 0.84).

Table 6: Strategies for Enhancing the Timely Completion of Procurement Process amidst the Wave of COVID-19 Pandemic in Public Construction Projects

Code	Strategies	RII	Rank	Decision
E7	Implementing public health measures	0.89	1	Very Effective
E8	Use of hand sanitizers	0.87	2	Very Effective
E1	Transforming from traditional system of centralized procurements to a more robust system of decentralized procurements	0.86	3	Very Effective
E3	Need for all participants in procurement process to ensure transparency, accountability, probity and value for money	0.86	3	Very Effective
E6	Implementing social and physical distancing measures	0.84	5	Very Effective
E9	Wearing of face mask	0.82	6	Very Effective
E5	Imposing movement restrictions	0.81	7	Very Effective
E4	Imposing general and selective lockdowns,	0.78	8	Effective
E2	Providing budgetary support to enhance the implementation of the 2020 Appropriation Act in the face of dwindling revenue	0.62	9	Effective
Average RII		0.84		Very Effective

Discussion

In line with the findings of this study, past studies also reported that the procurement activities most likely to be affected by COVID-19 pandemic have very high tendencies of being affected by the COVID-19 pandemic. For instance, Nwogwugwu and Adebayo (2015) reported that the need for good and efficient public procurement processes cannot be over emphasized because apart from the fact that it ensures accountability and transparency in the award of contracts and in government circles, it is also a catalyst for development. Findings of this study on the impact of COVID-19 pandemic on the success of the procurement process are in line with findings from past studies. This is because past studies have revealed that the COVID-19 pandemic has affected the processes of public construction projects by causing delays which result into suspension measures in respect of tenders (World Bank Group, 2020); inefficiencies in work processes, combined with bureaucracy which may mean delays in implementation (Bailey *et al.* (2020; COVID-19 Pandemic Emergency Project, 2020); and delays in completion dates of construction projects which may jeopardize project profitability (ILO, 2021). Finally, findings from past

studies also agree with the conclusions of this study on the issue of effective strategy for enhancing the timely completion of procurement process amidst the wave of COVID-19 pandemic. This is because these studies have established that these strategies can result into of both short- and long-term actions that can be taken, either through direct government initiative or encouraged through civil society advocacy, to ensure the integrity and accountability of public officials, protect democratic institutions and ensure that COVID-19 responses are effectively protecting communities (Simpson *et al.*, 2011; ACAPS, 2020; Anyanwu *et al.*, 2020 Arcadis, 2020; Construction Leadership Council, 2020; Construction Manager, 2020; Hook, 2020; Ogunnusi *et al.*, 2020; WHO, 2020; Agarwal *et al.*, 2022).

Conclusions and Recommendation

This study discovered that the emergence of the COVID-19 pandemic in the last quarter of 2019 serves as a major threat to the successful completion of the procurement process. This has adversely affected the timely completion of the procurement process and the result is delay in the completion of construction projects leading to cost and time overruns in public

construction projects in Kaduna and Nigeria as a whole. In view of this, the study evaluated the impact of COVID-19 pandemic on the procurement process of public construction projects in Kaduna with a view to enhancing the timely completion of the procurement process. The results of the analysis of data undertaken led to vital conclusions and recommendations as stated in this section.

It was revealed that the procurement activities most likely to be affected by COVID-19 pandemic are “Tender opening information” and “Comprehensive disbursements data in relation to payments”. On the average, the rate of likelihood of all the procurement activities public construction projects in Kaduna to be affected by COVID-19 Pandemic is very high. The most significant impacts of COVID-19 pandemic on the success of the procurement process of public construction projects are “Delays in procurement process”; “Suspension of tenders”; and “Mis-prioritizing of objectives”. The most effective strategies for enhancing the timely completion of procurement process amidst the wave of COVID-19 pandemic are “Implementing public health measures and “Use of hand sanitizers”. On the average, all the strategies for enhancing the timely completion of procurement process amidst the wave of COVID-19 pandemic are very effective. It can therefore be concluded that the impact of COVID-19 pandemic on the procurement process of public construction projects in Kaduna, Nigeria is significant and can be mitigated through specific strategies.

In view of the findings and conclusions of the study, it is recommended that construction workers should be trained on COVID-19 and explanation of how the disease is potentially spread including training on implementing public health measures and the fact that infected people can spread the virus even without symptoms, including implementing public health measures and use of hand sanitizers. In order to ensure speediness of work practices, the adoption of staggered work

schedules should be enforced. Furthermore, Government should develop a mechanism for enhancing the timely completion of procurement process amidst the wave of COVID-19 pandemic or related world health issues in public construction projects using the components of the strategies proposed in this study as a basis.

Finally, in view of the limitations of time and financial constraints faced by this study, the study is suggesting further studies to assess impact of Government policies on the effectiveness of COVID-19 control measures during the procurement process of public construction projects in Nigeria. In addition, further studies should also be undertaken to carry out a comparative analysis of the effect of COVID-19 pandemic on the procurement process of public construction projects between the States of higher risk of COVID-19 and the States of lower risk of COVID-19 pandemic in Nigeria.

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