Innovations

Public Building Project Deficiencies: Problems and Prospects

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Abstract

Deficiencies in public building projects' delivery, abandonment, and collapse has turned out to be frequent occurrences in the developing countries like Nigeria. It is observed that significant negative devastating effects is impacted on their growing economies. However, time, cost and quality are major constraints that must be taken into consideration to be the desired project success. This study uses 46 questionnaire as a means of gathering the necessary data from the relevant professionals in the built environment in the building production. This result showed that appropriate test were not always carried out on most projects, delay in funds disbursement, administrative bottlenecks, design conflicts and inflation, exchange rate, government policy etc were major factors of project deficiency. The result however, concluded that if the aforementioned factors are critically managed during the design, planning and implementation phases of project life cycle, building projects will be successfully delivered.

Keywords: *1.Public Building, 2.Projects' Delivery, 3.Deficiencies, 4.Constraints, 5.Prospects, 6.Nigeria*

1.0 Introduction

Project quality are evaluated by performance measurement which can be defined as the processof evaluating performance relative to a success in terms of time, cost and quality these are thebasic criteria to project success. While project creates productive assets through the conversionof resources into productive assets, for the right quality, time and cost. (Nagarajan, 2012; OgundeAyodeji et al, 2017).Building production is a staged process that uses both professionals and non-professionals from a wide range of disciplines, each with their own expertise and goals. This is a blatant sign that this industry has a tremendous financial impact on the overall economy.The building industry is a driving force behind economic and infrastructure expansion, as shown by the successes documented, while failure, project abandonment, and collapse indicate dire consequences for the country's economy. (Nwachukwu&Emoh, 2011). According to Pinter and Punder (2013), success requires the accomplishment of objectives during each stage of the building production process and activities. Failure, on the other hand, is falling short of the goals set for the project.Long-standing project management practices often define project success as the projects that are delivered on schedule, under budget, and with high quality. Additionally, the project ought to give the client the highest level of satisfaction possible. (Nwachukwu&Emoh, 2011).

Deficiencies in Projects delivery, abandonment, and collapse has turned out to be frequent occurrences in the developing countries like Nigeria causing huge degree of severity and concerns with significant negative devastating impacts on their growing economies (Akande*et al*., 2018*)*. It is important to dwell on this problem because building projects exhibits problems that differ from those encountered within other types of procedural production activities. The challenges entrapped in project scheduling, coordination, and controlling are very

enormous and quite complex in the large projects which tends to require vigorous and careful scheduling and monitoring to attain successful completion of such projects to time and at judicious cost (Anyanwu, 2012). In order to ensure a successful project delivery, the project team must carefully monitor, control, and balance the problems resulting from project restrictions. (Chiguru, 2019). Time, Cost, and Quality trade-offs will ensure that projects are successfully completed (Tabish&Jha, 2018).

Previous researches have shown that, the private and public construction projects are barely delivered on time, cost, quality, and material specification expectations. In less than few months of completion of buildings or rehabilitation, these commissioned Infrastructures become decrepit and dilapidated despite the colossal funds expended on its delivery. Collapse of building facilities, some even during construction in Nigeria can best be ascribed as a holistic financial loss likened to project investor dramatically burying his life savings in a dug hole hence, staving alternative venture opportunities (Onifade, Afolabi, &Omogbolahan, 2017). An example of managerial failure in project delivery was exhibited in the recent collapse of a twenty-one storey building under construction at Ikoyi, Lagos Nigeria recorded in the end of year 2021.

Deficiencies in the delivery of projects in Nigeria emanate from several issues. For instance, deficient project planning, incompetency, inapposite application of planning procedure, scant apprehension of critical factors for project planning and project success index have been highlighted (Akande*et al*., 2018).

2.0 Literature Review and Theory

2.1 Concept of Project

Wickesberg& Cronin, 1962 described a project as a unique, temporary endeavor with a specific set of goals andobjectives which should be achieved within the scheduled time, cost and scope, requiringthe deployment of various stakeholders and organizations, lasting only the duration of the project as cited by Taha E. B, AmrM, and Zainul A. F.(2017).

A project is, in the simplest terms possible, any series of actions or succession of occurrences that involves merging various resources in order to achieve a specific objective. (Nwachukwu&Emoh, 2011). A project can be thought of as the realisation of a specific aim, which entails a concatenation of sequential tasks and activities that consume resources. It has to be finished by the specified deadline and start and end dates (Rosli, 2017).

2.1.1 Building Project

The building industry is vital to a country's economy. A geographical entity's economic viability is generally shown by the presence of physical infrastructures and prominent buildings like roads, skyscrapers, bridges, and other types of construction (Roshana&Akintola, 2002).Buildings are recognised as one of life's essentials since they not only give shelter but also a comfortable, conducive, healthy, and secure enclosed space where people can engage in a variety of activities, including social interactions. (Ogunbayo, Ajao, Alagbe, Ogundipe, Tunji-Olayemi, &Ogunde, 2018). The motivation of stakeholders in achieving appropriate, sufficient, and cheap building delivery is strongly correlated with addressing security demands and socioeconomic status of people.In order to ensure effective service delivery and maximised economic advantage, buildings are vital components of human activity that must be preserved. (Gouda, Abdallah, &Marzouk, 2020).

2.1.2 Project Success

Project success is relative, making it challenging to express in a few words, yet being every project manager's ambition and ultimate goal (Pinter &Pšunder, 2013). Due to its ambiguous nature, project success has been defined differently by many organisations and individuals.

There is consensus among experts on what constitutes project success and how it may be measured, despite complexity and diverse definitions (Fernando *et al*., 2015). In general, experts think that a project's success might be either long- or short-term. This has been used to refer to both efficacy and efficiency (Abdulla & Al-Hashimi, 2019)

2.13 Project Failure

The concept of project failure as the antithesis of the idea of success in project management will become clear with a knowledge of project success as stated above. When managerial expertise is not used to achieve goals and objectives, projects fail. This does not imply that the project was not actually finished; rather, it refers to the precise moment at which the project was declared finished. There are also the following issues to think about: Is there a time or money overage? Have the defined quality requirements been met? Will it hold up to the test of time? Can you utilize the project's potential to the fullest? Are your clients and end users content and satisfied?Can a client insist on working with the same team if the client suggests starting a new project? The project is deemed successful if the responses to the aforementioned questions are satisfactory; otherwise, it is deemed unsuccessful(Nwachukwu&Emoh, 2011

2.2 Theory of Constraints

Dr.Goldratt first developed the Theory of Constraints (TOC) in his book The Goal, which is a general management philosophy. Any manageable system is only able to accomplish its objectives within a specific environment, where there is always at least one limitation in reality, according to the idea behind this title. A constraint is simply the point at which a project or job does not function as intended (Bhagdewani, Kanase, &Shinde, 2017). The core principles of TOC were first stated by Goldratt, one of the co-founders of the organisation. Each system has at least one restriction that prevents it from performing better in relation to its objective. The system should produce its greatest output when that constraint is used to its full potential. Maximum use of non-constrained resources does not enhance output; instead, it just generates wasteful inventory (Skorkovský&Linhart, 2014). The theory, which is a type of systems thinking, contends that each complex system, at any one time, frequently only has one aspect or limitation that prevents it from achieving more of its goal. Exploiting the limitation and adjusting scheduling and resource consumption are necessary (Rugenyi, 2015).

2.3 Empirical Review

S/N	Authors and Year	Methodology	Findings	Gap
1.	Sibiya, Aigbavboa and Thwala (2015): construction projects' key performance indicators using South African Construction Industry as a case study [South African]	Primary data through questionnaire survey among the professionals by randomly selection. Principal Component Analysis (PCA) was used for analysis	Revealed that the most significant construction projects KPIs	Outside Nigeria
2.	Anyanwu (2012): [Nigeria]	Literature review	Established project management is a key instrument that project managers can use to successfully complete building projects. It also acknowledged the necessity of hiring professionals for construction projects.	Literature review based study
3.	Ebiloma&Rimtip (2019): [Nigeria & UK]	Face to face and telephone interviews; Contents analysis	identified obstacles to the use of PMMs and the success rate of the approaches	Not specific to building sector

4.	Patel, *et al* (2016): [Gujarat]	Literature review; Survey; Significance Index method and Spearman's rank correlation coefficient	Explored significant critical success factor of building project	The study was carried out outside Nigeria
5.	Belay *et al* (2017): [Ethiopia]	Questionnaire administration and Interview session; purposive selection of respondents	Identified the highest significant success factors in building construction projects	Outside the study area.
6.	Osuizugbo (2020): [Nigeria]	A literature review and survey questions made up the research methodology.	Revealed the gap of Building Production Management (BPM) as the main reason behind building failures/ collapses among other consequences.	
7.	Eja and Ramegowda (2020): [Nigeria]	Literature Review	It investigated the causes, effects and consequences of project failures in developing countries,	Findings were based on literature review only
8.	Damoah (2015): [Ghana]	Semi-structured interviews	Reported on the scope, reasons, and results of the Ghanaian government's project failures. Show that the repercussions of project failure are sequential and interconnected; one effect may lead to another in that order.	Outside the study area, and the consequences of project failure were not specific to stakeholders.
9.	Oluseye (2017):	Literature Review	The study also identified the causes of the issue with project cost overruns and timetable delays in public building infrastructure in Sub-Saharan Africa	Findings were based on literature review only
10.	Osuizugbo (2019): [Nigeria]	Using a survey design involving questionnaire distribution. Spearman's rank correlation; One-way analysis of variance	The study revealed that the top five most important project failure factors	Scope limited to design and construction phase of building project.
11.	Nzekwe, *et al* (2015): [Nigeria]	Using a survey design involving questionnaire distribution.	Established the frequency of failure of projects and propelling factors.	Outside the Study area.

12.	Ong *et al*. (2018):	Development of model through qualitative approach.	Developing a quality extension to Earned Value Management (EVM), which include: Quality Performed Assessment Method (QPAM) and Earned Quality Value Management (EQVM)	Outside the Study area.
13.	Mellado*et al*. (2020): [Chile]	Combined qualitative and quantitative approach – a thorough analysis of the research on overall project success and the statistics To determine if the writers agree on the authors' assessments of performance in the construction business, use Kendall's W test.	There is no harmonic link between what performance is and the conventional "cost-time-quality" iron triangle.	Outside the Study area.
14.	Al-Hajj and Zraunig (2018): [Lebanon]	A web-based survey was used to gather quantitative data, and 142 project managers were asked 20 questions; Pie and bar chart presentations of percentage distribution.	The majority of successful projects don't use modern project management tools and methodologies to their full potential.	Outside the Study area. There is also limitation on the tool used for the analysis which can be used to generate findings for the entire population
15.	Badewi (2015): [UK]	Survey design; Structural Equation Modelling (SEM)	It revealed that a significant proportion of organisations adopt PM and BM concurrently, and PM practices influence both project management success and project investment success	Outside the Study area.
16.	Silva *et al*. (2018): [Colombia]	cross-sectional quantitative research; Correlation analysis	Reported no statistically significant link between the effectiveness of the project and the use of project management approaches.	Outside the Study area.
17.	Neyestani (2016); [Philippines]	Survey questionnaire; descriptive statistics	The implementation of Quality Management System (QMS) affect mostly customer's satisfaction.	

18.	Olawumi and Chan (2019): [Global]	Analysis was conducted using an explanatory case study approach and case study data from four BIM building projects.	The model created was discovered to enhance communication channels and make it simpler to integrate technology advancements into building operations while enhancing the technical proficiency of project workers.	Limited to BIM whereas there are other frameworks
19.	Abdulla and Al-Hashimi (2019): [Kingdom of Bahrain]	Questionnaire survey; and semi-structured interviews. Correlation and regression analyses	In contrast to comprehensive PMMs, the study found that applied PMMs have a greater impact on project success.	Outside of the Study area.
20.	Oviasogie*et al.* (2020); [Nigeria]	Questionnaire survey; Mean Item Score (MIS)	The study revealed the most critical success and failure factors in relation with projects within the construction industry.	Outside the Study area and not specific for building projects.
21.	Jugdev*et al.* (2013); [Australia, Canada, and the UK]	Survey design and purposive sampling technique.	The study reported that there is a strong direct association between the utilisation of risk management tools and the quantity of project management tools.	Outside the Study area and not specific for building projects.
22.	Alotaibi (2019; [Saudi Arabia]	Survey and interview some of the more experienced PMs; Both statistical and thematic analyses were done based on the nature of data collected.	The study found that Project management practices should increase perceived project success, decrease project failures, and enhance the industry as a whole.	Outside of the Study area and not specific for building projects.
23.	Onfade*et al.* (2017); [Nigeria]	Personal observation, interviews, and a structured questionnaire in the research field. Frequencies, percentages, tables, the mean, and chi-square analytical techniques were utilised as descriptive and inferential tools.	The majority of respondents, according to the study, are aware of project management methods and their value in carrying out successful road building projects.	Outside of the Study area and not specific for building projects.

24.	El-Maaty*et al.* (2017):	Field examination of the built-up road developments. percentages of time overruns, cost increases, and quality levels	The study discovered the proportions of quality level, time overrun, and cost increase	Outside of the Study area and not specific for building projects.
25.	Nakhleh (2019); [Qatar]	Correlation study and purposive selection of project sponsors, managers, and coordinators; Questionnaire survey; Multiple regression	Time and cost estimations were shown to have a substantial linear connection with project performance.	Outside the Study area and not specific for building projects.
26.	Chiguru (2019): [Tanzanian]	Quantitative data from primary sources; tables and graphs displaying descriptive statistics; The inferential statistics employed were those of multiple linear regression.	Revealed the contribution of Triple Constraints and factors that affect the three constraints.	Outside the Study area and not specific for building projects.
27.	Egboga and Daniel (2022) [Nigerian]	A thorough literature study is used in conjunction with a combined qualitative and quantitative methodology to evaluate project success overall. The application of a systematic quantitative evaluation technique was adopted.	The study was based on an analysis of the literature that existed between 2000 and 2021. The results of the study showed that the performance of building projects may be significantly gauged by the Iron-Triangle factors of time, cost, and quality.	Results were based only on a survey of the literature on the effectiveness of construction projects.

28.	Taha E. B, Amr M, and Zainul A. F. (2017)	The research was based on case study inquiry strategy comprising of three case studies, which incorporated interviews with project managers of the respective mega construction projects.	Two major findings were identified. Firstly, the project management approaches that contribute to the success of Mega Construction Projects in developing countries Secondly, more specific project management approaches and Critical Success Factors within the context of developing countries were identified from the findings of the study	Outside the Study area and not specific for building projects.

3.0 Methodology

Method of data analysis

S/N	Objective	Tool	Formula	Description
A	Objective One	Percentage distributions	$\frac{\sum W}{N}$	**W is the weight that respondents assigned to each question, and N is the overall number of respondents.**
B	Objective Two	Percentage distributions	$\frac{\sum W}{N}$	**W is the weight that respondents assigned to each question, and N is the overall number of respondents.**

Model Specification

The multiple regression equations below is used to establish the dependency relationship between variables in the study

$$Y = f(X) Y = f(X)$$

$$Y = \beta_0 + \beta X + e \; Y = \beta_0 + \beta X + e \quad (1)$$

Where:

$Y = Project\ Success$

$X = X =$ Management Strategies for projects delivery

$\beta_0 \beta_0 =$ Constant

$\beta = Coefficients$

4.0 Discussion of Findings

A preliminary investigation was carried out to determine whether public building projects failure existed in the research area. Professionals from 26 specific government and corporate organisations or agencies in Ogun State were among the respondents for the research. Two copies of the preliminary survey instruments were intended for distribution in each of the establishment. However, in few locations (7, 26.9 per cent), only an individual was available as presented in Table 3.5. Thus, 46 responses were returned, accounting for 82.1 per cent of the total intended.

4.1 Demographic Characteristics

Table 3.6 shows the demographic characteristics of preliminary study respondents. Gender wise, 91.3 per cent of the respondents were male while 8.7 per cent were female. The dominant age bracket was 46-55 years (37.0 per cent), followed by 36-45 years (26.1 per cent), Above 56 years (17.4 per cent), 26-35 years (13.0 per cent) and 18-25 years (10.9 per cent). Civil Engineering has the highest representation (43.5 per cent), Building and Quantity Surveyors were 15.2 per cent and 13.0 per cent respectively. Architecture and Building were 6.5 per cent and 10.9 per cent respectively while others not captured in the research instrument were 10.9 per cent. Furthermore, while those with 21-25 years and 11-20 years of experience were 30.4 per cent and 26.1 per cent in that order, those above 26 years, 1-5 years and 6-10 years in experience were 21.7 per cent, 17.4 per cent and 4.3 per cent correspondingly.

On their current departments, those working in Works and Services are the highest group (43.5 per cent). Professionals working in the Physical Planning were 19.6 per cent. Those in Project Development Unit and Project Implementation Unit were 10.9 per cent and 8.7 per cent respectively even as those in Maintenance/Facility Management were 2.2 per cent compared to those in other units/departments not captured in the instrument who were 15.2 per cent. The respondents hold certain positions in their establishments namely Director (28.3 per cent), HOD (26.1 per cent), Coordinator and Senior Professional (13.0 per cent each), Supervisor (8.7 per cent), others (6.5 per cent) and Technical Officer (4.3 per cent) in descending order of percentages.

The institutions could be categorised into Governance and Administration (37.0 per cent), Education (26.1 per cent), Hospitality/Service (8.7 per cent), health (2.2 per cent) and others (26.1 per cent).

Table 4.1: Demographic Characteristics

Sex	**Frequency**	**Percent**
Male	42	91.3
Female	4	8.7
Total	**46**	**100.0**
Area of Specialisation		
Architecture	3	6.5
Civil Engineering	20	43.5
Building	5	10.9
Project Management	7	15.2
Quantity Surveying.	6	13.0
Others	5	10.9
Total	46	100.0
Age		
18-25 years	5	10.9
26-35 years	6	13.0
36-45 years	10	21.7
46-55 years	17	37.0
Above 56 years	8	17.4

Total	46	100.0
Years of Job Experience		
1-5 years	8	17.4
6-10 years	2	4.3
11-20 years	12	26.1
21-25 years	14	30.4
Above 26 years	10	21.7
Total	46	100.0
Educational Qualification		
ND or Equivalent	3	6.5
HND	6	13.0
B.Sc	19	41.3
M.Sc/MTech	14	30.4
Ph.D	3	6.5
Others	1	2.2
Total	46	100.0

Table 3.6: Demographic Characteristics (Cont'd)

	Frequency	**Percent**
Years of Professional Experience		
1-5 years	6	13.0
6-10 years	2	4.3
11-20 years	15	32.6
21-25 years	14	30.4
Above 26 years	9	19.6
Total	46	100.0
Current Department		
Physical Planning	9	19.6
Works and Services	20	43.5
Maintenance/facility Management	1	2.2
Project Development Unit	5	10.9
Project Implementation Unit	4	8.7
Others	7	15.2
Total	46	100.0
Position Held		
Director	13	28.3
HOD	12	26.1
Coordinator	6	13.0
Supervisor	4	8.7
Senior Professional	6	13.0
Technical Officer	2	4.3
Others	3	6.5
Total	46	100.0

Organizational Classification		
Health	1	2.2
Education	12	26.1
Hospitality/Services	4	8.7
Governance and Administration	17	37.0
Others	12	26.1
Total	46	100.0

4.2 Quality Related Information

Number of public buildings initiated in the last five years: On the number of projects executed within the organisation in the last five years, 30.4 percent stated that only one project had been initiated, 52.2 percent reported two projects. 4.3 percent, 6.5 percent, 2.2 percent, and 4.3 percent reported that three, four, five and seven projects respectively had been initiated in the last five years.

Project Sponsor/Donor: The natureof the project pre-surveyed are characterised by different sponsorship or financiers as identified by the respondents. According to the 34.8 per cent of the professionals, some of the projects were donated by LG, 21.7 per cent were sponsored as Ministry of Special Duties, 19.6 per cent were IGR sponsored, and 13.0 per cent fall within the purview of the Ministry of Local Government & Chieftaincy Affairs. 8.7 per cent were TETFUND sponsored, and 2.2 per cent indicated GPS.

Contractor: While 69.6 per cent opined project were involved direct labour, 30.4 per cent stated that project involved construction company.

Consultant: Works Department were consultant to some of the project according to 73.9 per cent of the respondent while others have Consulting Firm as consultant based on the response of 26.1 per cent.

Project Purpose: 23.9 per cent of the respondents stated that projects are for community use, 10.9 per cent observed that project were for public use, 45.7per cent stated that project are for revenue generation just 19.6 per cent stated that project are for academic activities.

Type of building: As observed by the professionals, building projects are one floor (32.6 per cent), two floors (4.3 per cent), and more than two floors (63.0 per cent)

Carrying Capacity: On the carrying capacity, 60.9 per cent observed that capacity is less than 100, 17.4 per cent said their projects have 100-500 capacity; even as 21.7 per cent said, their projects have greater 500 capacity.

Survey requirement and conduct of tests: Most of the respondents (80.4 per cent) said survey was not required neither were tests conducted while few (19.6 per cent) stated otherwise.

Habitability/Issuing of completion certificate: According to Table 3.7, 97.8 per cent observed that building projects habitability/completion certificate issued was issued on their projects while 2.2 per cent said otherwise.

Project management model applied: They all stated that programme of work was used on the projects.

Impact of model applied to achieve project quality control: The impact of the model applied to cost related issues on building projects is moderate for about 60.0 per cent of the respondents (58.7 per cent); it is low for 32.6 per cent of the respondents and high for 8.7 per cent.

Quality Related Information

	Frequency	Percent
Number of public buildings initiated in the last five years		
1	14	30.4
2	24	52.2
3	2	4.3
4	3	6.5
5	1	2.2
7	2	4.3
Total	46	100.0
Project Sponsor/Donor		
GPS	1	2.2
TETFUND	4	8.7
LG	16	34.8
Ministry of Local Government & Chieftaincy Affairs	6	13.0
IGR	9	19.6
Ministry of Special Duties	10	21.7
Total	46	100.0
Contractor		
Direct Labour	32	69.6
Construction Company	14	30.4
Total	46	100.0
Consultant		
Works Department	34	73.9
Consulting Firm	12	26.1
Total	46	100.0
Project Purpose		
Community use	11	23.9
Public use	5	10.9
Revenue	21	45.7
Academic activities	9	19.6
Total	46	100.0

Quality Related Information(Cont'd)

	Frequency	Percent
Type of building		
1 floor	15	32.6
2 floors	2	4.3
> 2 floors	29	63.0
Total	46	100.0
Carrying Capacity		

<100	28	60.9
100-500	8	17.4
>500	10	21.7
Total	46	100.0
Survey requirement and conduction of tests		
Yes	9	19.6
No	37	80.4
Total	46	100.0
Habitability/Issuing of completion certificate		
Yes	45	97.8
No	1	2.2
Total	46	100.0
Project Management Model Applied		
Program of Work	46	100.0
Impact of model applied to achieve project quality control		
Low	15	32.6
Moderate	27	58.7
High	4	8.7
Total	46	100.0

4.3 Cost Related Information

Project Budget: According to 15.2 per cent of the respondents, project budget exceeded N500m, 58.7 per cent stated that budget is between 101m-500m, 23.9 per cent stated that budget is within 10m-100m range while 2.2 said, project planned cost is less than N10m.

Actual cost of project completion (N): The actual project cost was greater than N500m for 43.5 per cent, between 101m-500m for 32.6 per cent, between 10m-100m for 21.7 per cent and less than 10m for 2.2 per cent. Comparing this result with the budget cost, it could be observed that, there is an increase in the percentage of respondents that indicated greater than N500m (highest project budget) from 15.2 per cent to 43.5 per cent. This is a difference of 28.3 per cent. This means the actual cost of project execution has already overrun the budget.

Expected project cost value at completion: The expected project cost was greater than N500m for 65.2 per cent, between 101m-500m for 10.9 per cent, between 10m-100m for 21.7 per cent and less than 10m for 2.2 per cent. These values have indicated further increment in percentage of respondents that indicated more than N500m actual cost from 43.5 per cent to 65.2 per cent. This is a difference of 21.7 per cent. This means projects with lower range of contract budget have increased to higher level.

Cause of cost variance: The highest cause of cost variance is inflation and exchange rate (58.7 per cent), followed by government policy (13.0 per cent) and delay in fund disbursement (10.9 per cent). Design conflict (4.3 per cent) is another cause of variance while some respondents (8.7 per cent) stated that all the listed caused combined to cause variance.

Project management model applied: They all stated that programme of work was used on the projects.

Cost Related Information

	Frequency	Percent
Project Budget		
<10m	1	2.2
10m-100m	11	23.9
101m-500m	27	58.7
>500m	7	15.2
Total	46	100.0
Actual cost of project completion (N)		
<10m	1	2.2
10m-100m	10	21.7
101m-500m	15	32.6
>500m	20	43.5
Total	46	100.0
Expected project cost value at completion		
<10m	1	2.2
10m-100m	10	21.7
101m-500m	5	10.9
>500m	30	65.2
Total	46	100.0
Cause of cost variance		
Design conflict	2	4.3
Delay in fund disbursement	5	10.9
Government policy	6	13.0
Inflation and exchange rate	27	58.7
All of the above	4	8.7
Total	44	95.7
System	2	4.3
Total	46	100.0
Project management model applied		
Program of Work	46	100.0
Impact of model applied to achieve project quality control		
Low	18	39.1
Moderate	26	56.5
High	2	4.3
Total	46	100.0

4.4 Time Related Information

Date of commencement of project: The project has different completion periods. According to 4.3 of the respondents, some of the project were planned to be executed within 2015-2017, 93.5 per cent indicated, between 2018-2020 while, others observed that projects under the jurisdiction have 2021-completion date.

Estimated completion period: The estimated duration of the projects varies from 1 month (2.2 per cent), to 2-5 months (17.4 per cent), to more than 5months (80.4 per cent).

Actual completion date: According to the response of 97.9 per cent of the professionals, completion date was between 2018-2020 for some of the projects, whilst the stated that the actual completion period was 2021. This means that most of the project that should have been completed within 2015-2017 was eventually completed between 2018-2020.

Actual state/milestone achieved on project as at date: It was noted by the 8.7 per cent of the respondents that some of the projects were still 50-99% complete despite the expiration of their completion date while 91.3 per cent revealed 100% completion for other projects.

Cause of time variance: The dominant cause of time variance was delay in fund disbursement (69.6 percent). Other causes include Government policy (8.7 percent), Inflation and exchange rate (6.5 percent), Administrative bottleneck (2.2 percent), Design conflict (2.2 per cent), and Natural disaster/pandemic (COVID-19) (2.2 percent). Few respondents (8.7 per cent) believed that all the aforementioned causes contribute to time variation.

Project management model applied: They all stated that programme of work was used on the projects.

Impact of model applied to achieve project quality control: When asked about the impact of model applied to achieve project quality control on the project duration, 65.2 per cent stated that the impact was low; 30.4 per cent opined that impact was moderate; and 2.2 per cent revealed that the impact was high the same percentage that said the impact was very low.

Summary of findings from preliminary survey

From the preliminary study it was found that:

Although habitability certificate was issues for most of the projects, survey requirement and relevant tests were not conducted to improve the quality of the products the projects were to deliver.

There were cost variations most of which were associated with project involving higher budget and causes included: inflation and exchange rate, government policy, delay in fund disbursement and design conflict.

Time overruns were observed in the some of the projects with completion rates between 50-99%. Possible causes include delay in fund disbursement, administrative bottleneck, design conflict and natural disaster/pandemic (COVID-19).

Time Related Information

Date of commencement of project		
2015-2017	2	4.3
2018-2020	43	93.5
2021	1	2.2
Total	46	100.0
Estimated completion period		
1 month	1	2.2
2-5 months	8	17.4
> 5months	37	80.4
Total	46	100.0
Actual completion date		
2018-2020	45	97.8
2021	1	2.2
Total	46	100.0
Actual state/milestone achieved on project as at date		
50-99% complete	4	8.7
100% complete	42	91.3

Total	46	100.0
Cause of time variance		
Administrative bottleneck	1	2.2
Design conflict	1	2.2
Delay in fund disbursement	32	69.6
Government policy	4	8.7
Inflation and exchange rate	3	6.5
Natural disaster/pandemic (covid-19)	1	2.2
All of the above	4	8.7
Total	46	100.0
Project management model applied		
Program of Work	46	100.0
Impact of model applied to achieve project quality control		
Very low	1	2.2
Low	30	65.2
Moderate	14	30.4
High	1	2.2
Total	46	100.0

5.0 Concluding Remarks

The study concluded that projects managers must be competent, skilful and knowledgeable on how to manage the critical constraints of public building projects delivery (Time, Cost and Quality/Scope). The timing of delivery is important as it talks more of the integrity of the project manager taking into consideration the cost/budget provision management approach to mitigate against cost over-run and the quality of building projects to be delivered viz a viz the specification, material schedule, and stakeholders' satisfaction

Recommendations

Based on the findings from the study, the following recommendations are made.

i. Adequate time and efforts must be put into the initiation phase of building projects in the study area to detailed project specifications; and work breakdown to arrive at project plan free from ambiguities.
ii. Project owners should be encouraged to follow due process in award of contracts of public building projects
iii. Emphasis should be placed on timing of project fund disbursement, and payment pattern, contract administration, enforcement of compliance on specification and quality requirements, including test and work breakdown supervision or monitoring
iv. Project managers must ensure timely mobilization of resources to production sites (materials, equipment and manpower
v. Budget planners must put into consideration contract award duration and timing to be able to manage effectively seasonal weather effects, government inconsistent policies and economic downturn to forestall project abandonment and disputes

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