Determinant Variables of Quality Tendering and Effect on Construction Project Time Scale and Successful Delivery

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ABSTRACT:
The tendering procedure as well as the derived or selected tenders have high propensity to influence projects success or failures. Using simple classified as well as questionnaire method of data administration, the research collected data on the factors that affect the derivation of quality tenders and the effects which lack of quality tenders can have on timely and successful projects: Research findings established an array of factors which influence the quality of tenders. Variables such as errors in contract drawings, tough market competition unforeseen changes in materials prices during construction stages were identified and ranked as the first three. In a similar vein, abandonment of project, due to losses and late project delivery, loss of contractors' profits was identified and ranked as the three most predominant effects amongst others. The research concludes that the derivation of quality tenders have effect on timely project delivery. The research recommends that the tendering processes and procedures should be scrutinized, consciously avoiding "Lowest bid Criteria" as the sole basis for arriving at tenders and subsequently for the award of contracts.

KEY WORDS: *(i) Tenders and Tendering (ii) Lowest Bid Price (iii) Quality Tenders (iv) Variables influencing the quality of tenders (v) The Impact of Quality Tenders on Time Scale & Project Delivery.*

INTRODUCTION:

Construction is a process which involves the assemblage and fabrication of raw and finished materials, integrating labour as well as plant inputs towards the achievement of infrastructure, building, civil engineering works and so on. The assemblage as well as the fabrication process also entails the integration of various personnel (professionals). Marshall (2001) has observed that in the field of architecture and civil engineering the construction

process consists of the assembling of infrastructure and that the job normally is managed by a project, supervised by a construction manager, design engineer, construction engineer or Architect. The ISO and British Standards has also articulated guidelines and publications as they relate to the stakeholders, the client and his consultants, the contractors as well as their functions/roles which include adopting tendering procedures and strategies towards the preparation of tenders. Tendering Procedures and Strategies provide the means through which contractors articulate, submit and win jobs. According to Tenders Info Resources Group, tendering process involves the submission and acceptance of a tender at an agreed price by a contractor and client respectively. The single stage selective, tendering 1977, refers to tender as the price for a contractor offers to carry out and complete a job, in accordance with the conditions of the contract, the works shown on the drawings, as described in the bills of quantities and/or specification and schedules. Simon (2002) refers to tenders as an offer usually made by a contractor or a vendor to undertake a job or supply goods. Aqua group (2007), explained tendering as a procedure that helps clients to obtain an acceptable offer from contractors, on an appropriate time and circumstance.

The tendering procedures and strategies adopted by a contractor towards the procurement of a job to a large extent determine, his winning of the job. Good tendering procedures and strategies have a high propensity to give rise to quality tenders which is dependent and could be well enhanced via competition arising from the contractors' tenders. Suffice, it to say that competitive tendering have some inherent characteristics, which provide transparency and give all suppliers and procedures to win jobs. Quality tenders ultimately give rise to efficient and effective contract awards that ultimately culminate in timely and successful delivery of projects. Based on the above assertions, it would appear reasonable to deduce that the main objective of tendering is to ensure that the "best fit" contractor who will offer the value for money is selected. The above assertion is also in resonance with that of Stanley (2011), who further revealed that a contractor, if he is found sound commercially, technically and financially strong, is perceived as the best for the task.

The above assertions as well as revelations concerning the advantages of competitive tendering notwithstanding, a Plethora of problems have bedeviled obtaining of competitive tenders. An array of authors has articulated and forwarded their assertions to that effect. These authors include Flanagan and Norman (1982), who reported that the selection of contractors by the lowest bidder will not necessarily reflect the "true cost" of the project. Lathan (1994), also opined that the criteria to select a consultant and contractor should be based on skills, experience and previous performance rather than accepting the lowest in all cases. Other aspects where authors have identified as problems area that have bedeviled obtaining of competitive tenders, arising mainly through the acceptance of the lowest bid price" include the revelations of Ulcher and Runeson (1984), revealed the selection of

inappropriate contractor, increases in disputes and dissatisfaction amongst stakeholders as problems areas. Hatush and Skitmore (1998), as it relates to the selection of contractors by the lowest bid procedure and its concomitant effect on unsuccessful project delivery arising from the quotations of too low. Prices as well as Claims. Netscher (2015), points out, that awarding a project to a contractor whose price is too low could lead to problems if the contractor later becomes bankrupt or default on terms of contract. The Contractor (2017), points out risks as a problem area where the lowest tender is chosen. Ngu and Luu (2008), Raisebeek (2008) have also agreed that though the lowest bid price is a highly weighted, it does constitute prime cause of problem for the selection of contractors in most works. The assertions of several other authors further buttress how the problems associated with the chose of contractors based on "The Lowest bid" syndrome could be well reduced. Aqua Group (2017), revealed that it may be necessary to consider the tendering process in terms of a total programme of which the job is one project. Wale and Willey (2010), also highlighted that choosing a competent contractor is more important to deliver contract project successfully. Seaman and Salem (2017), points out that tenders based on "Lowest bid" could be misleading in terms of achieving success in the overall construction project, with the consequential effects of distortions on planned contract time, delays cost overrun and claims. Based on the above assertions, it is therefore reasonable to evaluate several of the factors that account for selection of tenders; quality or poor ones and the consequential impact on project time scale and successful delivery. Significant factors in this regard are the evaluation of tenders based on lowest prices/bids and those using contemporary assessment methods. The outcome of tenders based on lowest prices/bids, might not necessarily lead in best value tenders being selected, however contemporary assessment method of tender which seeks to have the best value, is normally predicated on criteria that transcend lowest price, offers the best value for money as well as best quality is a predominant concern of this study.

In relative terms, there exist considerably research works on the evaluation of factors that affect successful delivery of project adopting traditional tendering strategy, which concentrated on the lowest price bid as basis as studies on other tendering methods and their impact on project success. This research is therefore one of such efforts geared towards improving the knowledge and information in the area of tender selection and its concomitant impact on project time scale and subsequently on successful delivery. This the research was able to achieve through the appraisal of variables which affect project time and project delivery, resultant of the quality of tender.

The following are the objectives of the study: (1) Identification of the factors affecting quality of tender as well as the perception of contractors and consultations on these factors. (2) Determination of the relationship between the quality of tenders and timely delivery. (3) Identification of the several of the factors which inhibit successful project delivery. (4)

Proffer solutions/mitigation measures to the factors which inhibit effective project time scale and subsequently successful delivery:

The following define the scope, limits and bounds within which results of the research hold. The study is limited to the appraisal of the factors which influence the quality of tenders, as well as the impact on project time scale and consequently on successful delivery. The study location is Port Harcourt metropolis, its choice as case study is predicated on the premise that it is a mega city with high prevalent rate of construction activities. The time period also recorded significant construction activities. The above mentioned factors have also influenced the experiences as well as the competence of stakeholders-consultants, public and public sector contractors; this was considered appropriate for response on a research of this nature.

Previous Studies:

The study draws from the early works of other scholars as it relates to the factors which influence project time scale resulting, quality of tenders and its impact on successful delivery of project. See for example the work of Alzami and McCaffer (2000), cited in Magsoom et al (2010). The result, reports that the selection of a suitable contractor impacts directly on its successful completion. Planees Waran and Jumara Wamy (2000), San (2011) and Noor et-al (2013) cited in Magsoom et al (2019) reports on the result of alternative bidding systems and high competition in tenders, revealing that it leads to high performance. Noor et-al (2013), result establishes the consequences which lack of apathy to change as well the continuous use of bid processes that focus on best value procurement strategy. Idrus et-al (2011)'s result focused on the variables that influence the criterion for selecting contractor using severity index and ranking evaluation methods. Laryea's Publication (2011) reports on an array of authors research works on the factors that influence bid or bid not decision, the quality and clarity of tender documents and thus their relationship on time spent on project implementation and subsequently on successful delivery. See for example Baja et al (1991), work on quality of tender and contractor's decision to bid for a job. Smith and Bohn (1999)'s result on the relationship between contract document and increase in contingency markups. See also Dulami and Hong's (2002), findings on the completeness of tender and its influence on decision to bid for job as well as Brook's (2004), result on the relationship between time spent on tender document and the cost of tendering. Khan and Khana's (2015), result that the least price bid does not guarantee maximum value for contract award.

REVIEW OF RELATED LITERATURE: SUCCESSFUL DELIVERY OF PROJECT: (SOME ISSUES FOR CONSIDERATION)

A successful delivered project entails one that is completed within first budget, achieved within projected time schedule as well as requisite specification and standards. The attainment of a successful project or failure is influenced by a couple of variables.

Marshall (2001), has identified the management function of planning as one of those variables: in this regard, the following were highlighted as important ingredients of planning amongst others: Effective design, the environmental impact of the job, adequate scheduling, budgeting, construction site safety and welfare. Other variables are checks on the availability of building materials, logistics, appraisal of likely inconvenience to public due to construction activities and delays as well programs prior to bidding with their schedules. Other issues that border on planning and its efficacy as management tool that ensures project success include the following headings: Smart people constituting right team in place with appropriate strategy to meet deadlines and stay organized, open communication etc. Further explanations on the place of planning towards achieving a successful project are considerations on careful risk program, risk log, planning of proper commitment on the site of project team as well as necessary project management tools. Project management.com (Palmer 2018) (Santos Jose 2020). In a related perspective Kumar (2009), has emphasized that successful project should not be accidental, project success should be predictable and repeated event, not a hit-and-miss occurrence. A Corollary to the above assertion is that planning as a management tool can ensure project success, relying on user involvement, executive support, project management, and so on expertise, as relevant tools. Chinn (2019), has concluded that the achievement of a successful project is not a matter of luck, it requires thorough planning, quality checks at regular intervals and project stakeholders' involvement.

QUALITY TENDERS AND THE SUCCESSFUL DELIVERY OF PROJECTS

The quality of tenders can significantly impact on project time scale and subsequently on project success. Quality tenders, just like adequate and proper planning can give rise to positive project delivery. An array of authors provides relevant headings that serve as basis for discussions that appraise the efficacy/consequences of quality or poor tenders on successful delivery of projects. See for example Al-herbi's et-al (1994) headings: Tough competition in the market, the time duration given for the submission of tenders, and so on. See also Shash's (1998) articulation that focuses on the variables of clearance of works specification etc. Smith and Bohn (1999), buttressing on the variables that influence/give rise to quality tenders, advanced the following as relevant headings, unclear contract document, increase in contingency and mark up in bids. Several other authors who are also in agreement on the above assertions, are, Dulami and Hong (2002), who see the variable of

completeness of tender document as one that influence bid or no-bid decision of contractors in Singapore. Brooks (2004), posited and advanced the variables influencing quality of tenders in the UK as poor specification, disparities between bills of quantities, drawings, and specification etc. Liu and Ling (2005), identifies completeness of tenders documents as a significant factor which affected markup in a questionnaire study of 29 US contractors. Netscher (2015), in a related perspective, observed incomplete, incorrect, shady or contradictory on drawings and documentation as potent variables which influence the quality of tenders.

ABSENCE OF QUALITY TENDERING: IMPACT ON PROJECT TIME SCALE AND PROJECT DELIVERY:

The earlier assertions, postulations and reviews on the variables influencing/quality tendering notwithstanding, non-adherence or failure to integrate or give due considerations those factors in the course of tendering, also have their consequences; that can have significant negative impact on project success.

Project failures resultant of non-adherence/lack of integration of variables that bring about quality tenders are manifest in several ways. Al-herbi's (1994), corroborating has observed that tendering process and procedure adopted can lead to project delay, tough competition in the market. Other manifestations revolve round the time duration for submission of tenders, errors in the contract award. In a related perspective Kaming et al (1997), cited byOlawale and Sam (2010) as well as Kumaraswammy and Chan (1998) cited by Olawale and Sam revealed variables that account for delays from the contractor as delays in design information, long waiting time for appraisal of drawings and so on. Other effects of construction delays resultant of lack/absence of quality tenders have been extant deal with by Albinu and Jagboro (2002) and Mukakau et al (2015). The authors identified the variables of disputes, arbitration and protracted litigation by the parties as potent factors. Other adverse manifestations include loss of construction profit, abandonment of project due to losses, late project delivery, extension of time and so on.

RESEARCH METHODOLOGY

This segment of the research explains the methodologies adopted towards the collection of data, as it relates to the factors which affect the quality of tendering as well as and the consequential impact on timely and successful delivery of projects.

Research methodology explains the underlying and guiding philosophies which determine the research design, the experiment, the quantitative and qualitative methods and why they are chosen (Will Hughes 2010). In this regard, the study adopts qualitative as well as

quantitative technique towards the collection and analysis of data, whilst the quantitative technique adopts structured interviews derived from respondents. The reasons for the usage of the interviews as well as questionnaire survey were predicated on the following: (i) To triangulate data obtained from the questionnaire survey. (ii) The enhancement, expansion and creation of in-depth of results obtained from the questionnaire survey; this it obtains through the investigation and on some of the issues highlighted. (iii) To explore the experiences of the sample population in relation to the topical issue. The research using archival means also obtains factual data, which were collected and presented in tabular form. The following constitute the parameters of the study: project type, initial contract duration, final and initial contract sums. The data is collected from Port Harcourt metropolis. The choice of Port Harcourt City, is predicated on the premise that the city is the administrative capital of Rivers State in the oil rich Niger Delta region of Nigeria. A considerable number of building development projects are required, within such a city, due to the extent of economic activities. This justifies the number of 50 building project as data. The research population, which focuses on the target group, focuses on reputable contractors, consultants – Architects, quantity surveyors and selected private developers. The study adopts both primary as secondary means of data collection. Primary data were obtained from selected contractors and the professionals, whose services were engaged towards the realization of the projects. The secondary data were collected through reviews of various relevant literatures.

SAMPLING TECHNIQUE: This research adopts classified sampling method; it adopts the simple random method. This random sampling technique ensures that all the items in the population studied have equal chances of being selected and are therefore not selected on bias; the population were not selected solely as a result of convenience. The sample size of this research is the same as the total number that makes up the target group, 50 buildings. 50 number questionnaires were administered to the owners, the consultants, contractors, project heads and quantity surveyors, involved in the projects.

PRESENTATION OF DATA, ANALYSIS, RESULTS AND DISCUSSIONS:

This segment presents the data, Analysis, results and the discussions on the results

Table 4.1 Presents the Demographic profile of the respondents as well as Percentage Composition.

DEMOGRAPHIC PROFILE OF RESPONDENTS

DESCRIPTOR	PARTICIPANT	PERCENTAGE COMPOSITE OF PARTICIPANTS
Gender	Male	97%
	Female	3%
Age Category	Below 20 years	0%
	21-30 years	23%
	31-40 years	25%
	41-50 years	34%
	51 and above	18%
Organization Role	Architect	35%
	Quantity Surveyor	44%
	Engineer	15%
	Project manage	10%
Nature Of Business	Consultancy	40%
	Contractor	60%
Professional Qualification	Graduate	32%
	Probationer	13%
	Member	19%
	Fellow	12%
Years Of Experience	Below 5 years	30%
	5-10 years	35%
	11-20 years	15%
	21-30 years	11%
	31 and above	9%

Source: Authors Questionnaire Interviews:

Table 4.2 presents Contractors and Consultants Perception of the Factors Affecting Quality of Tenders:

TABLE 4.2 CONTRACTORS AND CONSULTANTS' PERSPECTION ON THE FACTORS AFFECTING QUALITY OF TENDER

FACTORS	Consultants		Contractor		Overall	
	Mean	Rank	Mean	Rank	Mean	Rank
Tough competition in the market	5.00	1st	4.40	2nd	4.70	2nd
Time duration	2.35	8th	2.90	9th	2.60	8th
Errors in contract drawings	4.82	3rd	4.90	1st	4.86	1st
Discrepancy in specification	4.00	6th	3.52	6th	3.76	6th
Unforeseen changes in material prices in construction stage	4.88	2nd	4.30	3rd	4.59	3rd
Changes in scope of work	3.50	7th	3.20	7th	3.35	7th
Non availability of similar project data	1.90	9th	3.00	8th	2.45	9th
Personal experiences on similar project	4.60	4th	4.00	4th	4.30	4th
Inexperience of the estimator on similar project	4.60	4th	3.90	5th	4.25	5th

Source: Author's Field Work

Table 4.3 Presents Contractors and Consultants Perception of the Effects of Quality Tenders on Project Delivery.

Table 4.3

EFFECTS		Consultants		Contractor		Overall	
		Mean	Rank	Mean	Rank	Mean	Rank
1.	Loss of the contractors profit	4.73	3rd	4.51	3rd	**4.62**	**3rd**
2.	Abandonment of project due to losses.	5	1st	4.67	2nd	**4.84**	**1st**
3.	Late project delivery	4.94	2nd	4.73	1st	**4.84**	**1st**
4.	Extension of time	3.23	8th	4.12	4th	**3.68**	**8th**
5.	Cost overrun	4	6th	3.91	6th	**3.96**	**5th**
6.	Schedule overrun	3.13	9th	3.42	10th	**3.28**	**9th**
7.	Disputes	3.52	7th	3.78	7th	**3.65**	**7th**
8.	Poor quality of work due to hurrying of the project	4.53	4th	4.04	5th	**4.29**	**4th**
9.	Creates stress to the client	2.93	10th	2.51	9th	**2.72**	**10th**
10.	Acceleration losses	4.11	5th	3.63	8th	**3.87**	**6th**
11.	Litigation effect	2.46	11th	2.68	11th	**2.57**	**11th**

Source: Author's Field Work:

Descriptive Analysis: Figures 1 and 2 present Bar Chart showing factors that Affect Tender Quality

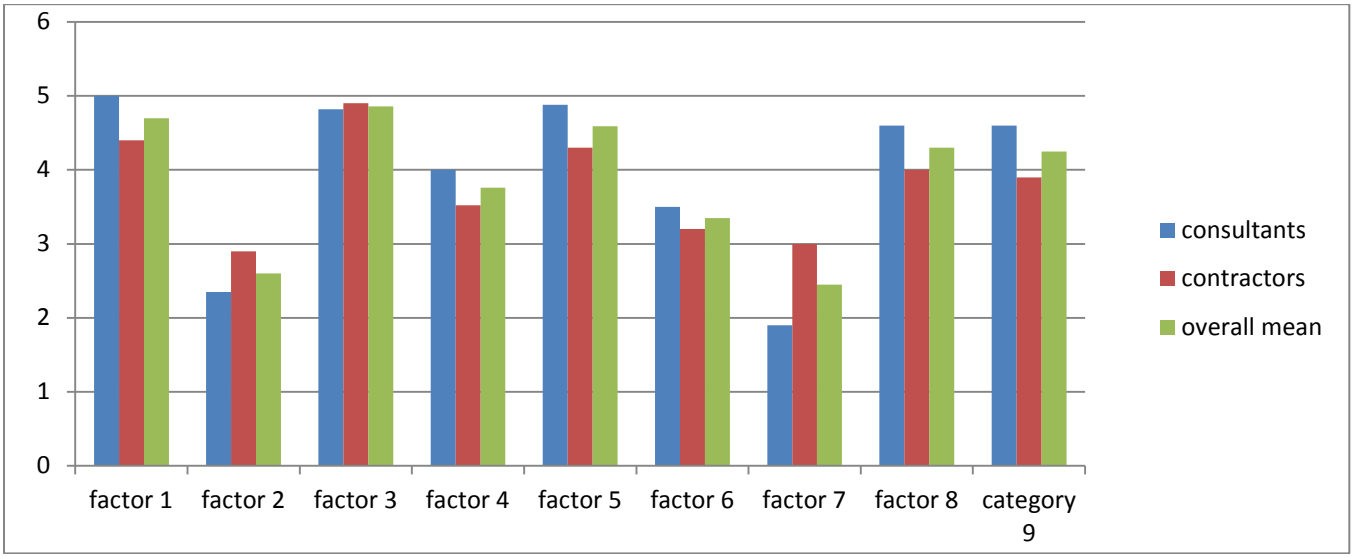

Fig.1 . Bar Chart showing factors that affect Tender Quality.

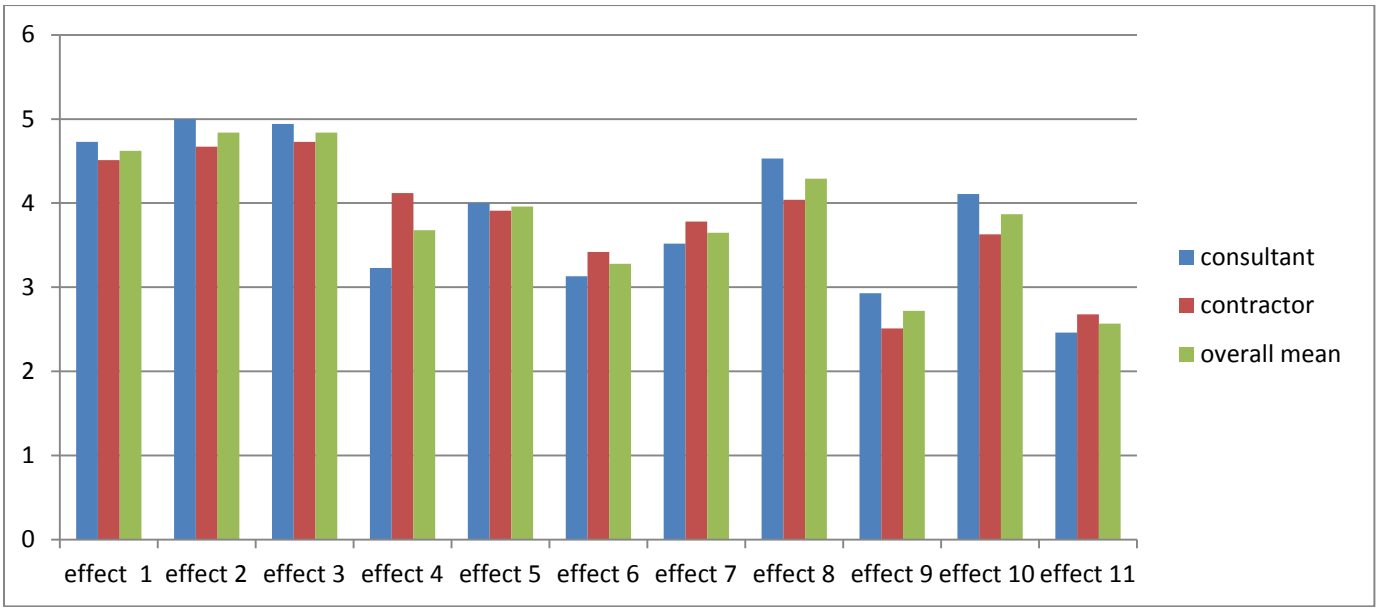

Fig. 2 Bar Chart showing the effect of quality tenders on project delivery:

DISCUSSIONS ON RESULTS:

The research established the factors that are responsible for the quality of tender, see Table 4.2 on page 10 from consultants and contractors' perceptions identified the following 9 factors as the highest ones which affect/give rise to the quality of tenders: Errors in contract

drawings, tough competitions in marketing the time duration taken to tender unforeseen changes in market prices and so on. Arising as well as the overall ranking (from both contractors and consultants), the result established and ranked the following as the top variables which the impact of poor quality tenders can have on project time scale and consequentially on successful delivery: (i) Abandonment of project due to losses (ii) Late project delivery (iii) Loss of Contractors profit (iv) Poor quality of work due to hurrying of project. The top factors affecting the quality of tenders as well as those which define the impact of poor tendering are derived using mean scores and ranking of the outcomes of values of the factors arising from consultants as well as contractors' perspectives. The analysis arising from the descriptive chart, see figures W2, on pages (18 & 19) consultants show same trends as those established through the empirical calculations using the techniques of central tendency and ranking, for the establishment of those factors that are determinants for the quality of tenders as well as the impact of poor tendering on successful poor project delivery. See (tables 4.2 and 4.3) on pages 10 and 11.

The results of this research is agreement with the assertions as well as the outcome of researches of Shash (1998), Bohnn (1999), Dulami and Hong (2002) study which analyzed the factors/variables that can lead to poor tender of construction project. The result also established that poor quality of tender can lead to prolonged time scale of project delivery. The outcome of this research which analyzed the effect/impact of poor tenders on project delivery are in tandem with the results of Brook (2004) and Mukukau et al (2015), which also established loss of contractor profit, abandonment of Project, late delivery and so on as significant variables that have impact on project delivery resultant of poor tenders.

SUMMARY OF RESEARCH FINDINGS:

The following are the constitutes of this segment of the work: The segment offers explanation on the conceptual meaning of the processes and procedure of tenders and tendering. The explanations on the lowest price/bid syndrome, reveals that contracts that are awarded strictly on such basis have inherent problems. The explanation further revealed that contracts awarded on contemporary tendering strategy, have higher propensity to deliver successful projects, rather than the lowest bid syndrome. The study also highlighted and appraised the factors which determine the quality of tender; The factors include skill and experience of those who forwarded and received the tenders. Other factors which determine the quality of tenders are the financial capability, past performance as well as the past experiences of the both consultants and contractors.

The study using classified sampling method and technique as well as other statistical analysis (mean score values and ranking), appraises the variables which determine the quality of tenders and tendering as well as impact on project time and subsequently on successful project delivery.

The Research Findings established the following factors as responsible for determining the

quality of tenders: The skill and experience of those who forwarded and received the tenders, the financial capability, past performance as well the past performance as well as the past experiences of both consultants and contractors. Other determinants of quality of tenders are: (i) errors in contract drawings (ii) tough competition in market (iii) time duration taken to prepare the tender and so on. Research findings also establish the following as effect/impact of poor quality tendering on project time scale and consequently on project success: (i) Abandonment of Project due to loses (ii) Late project delivery (iii) Loss of contractors' profit (iv) Poor quality of work due to hurrying of project. The outcome of the descriptive analysis are generally in tandem with those of the empirical analysis, employing the mean score: values as well as ranking as the basis for the analysis of variables.

CONCLUSION AND RECOMMENDATIONS:

The research concludes as follows that tenders based strictly on "Lowest Bid" could be misleading in terms of achieving success in the overall construction project; it does not lead to the best value tender being selected. Contemporary assessment of tenders however seeks to have the best value having considered all ramifications that enhance quality tenders. The research also concludes that the adoption of the "best fit" contractor ensures quality tenders as well as uninterrupted progress of work which culminates in efficient project delivery. The research recommends further studies that focus on the appraisal of other variables aside quality of tenders, which influence project time scale, cost of project and subsequently successful delivery. The study further recommends the deliberate avoidance of award of contracts that are strictly based on the "Lowest bid syndrome". Tendering procedures which are aimed at obtaining the "best fit" contractors; technically, commercially and financially should be well encouraged.

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