Global Journal of Researches in Engineering: G
Industrial Engineering
Volume 15 Issue 1 Version 1.0 Year 2015
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4596 & Print ISSN: 0975-5861

A Framework for Assessing the Effectiveness of Competitive Tendering Process for Public Works Procurement at Pre-Contract Stage in Chad Republic

By Sazoulang Douh
Kwame Nkrumah University of Science and Technology Ghana

Abstract- Effective implementation of competitive tendering has the potential for assuring transparency, accountability, fairness, justice and ethical standards in public works procurement. It promotes sound contract practices and growth of indigenous technology. Furthermore, it can reduce time and cost, promote competition, hamper corruption, and strengthen the public service system. Although, competitive tendering appears to be the most acceptable method of selecting contractors everywhere, its implementation in Chad is facing many challenges despite the reforms put in place in 2003 resulting in a very poor performance of government procurement. The lack of effectiveness assessment of the tendering processes at pre-contract stage is one of the main causes. Previous studies have identified a baseline of 38 standards practices along with five critical phases of the competitive tendering, seven relevant criteria and 13 key related measurable indicators. The adopted method is quantitative strategy. Respondents were asked to pair-wise compare phases, criteria and indicators using an Analytic Hierarchy Process scale and relative and composite weights of all identified variables were computed. Based on these findings, a framework for assessing the effectiveness of competitive tendering process at pre-contract stage is developed.

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GJRE-G Classification : FOR Code: 290502p

Strictly as per the compliance and regulations of :

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I. Introduction

In construction industry, Competitive Tendering (CT) is a procurement method whereby contractors are invited to make a firm and unequivocal offer of the price and terms which on acceptance shall be the basis of subsequent contract (Oladapo, 2000). So, competitive bids are submitted on the same basis, under the same conditions and using the same criteria for evaluation (Adetola, 2000). Consequently, CT is widely recognized as an attractive procurement mechanism and is commonly advocated by international organizations like World Bank (WB), European Union (EU), African Development Bank (AfBD), and the Organization for Economic Co-operation and Development (OECD). As a result, the majority of developing countries prescribed CT as the prime method of public procurement due to its widespread benefits. These include promoting competition and hampering corruption (Steven and Patrick, 2006), reducing cost by broadly 20% (Simon et al., 2005) and providing the enabling environment for effective utilization of scarce resources in the economy (Dikko, 2000). Although CT is predominantly used in developing economies, OECD (2010) has estimated that losses due to inappropriate procedures of procurement (lack of transparency, public accountability, fairness, and equity for example) at 20 to 30% of aids granted. Not only that, US National Performance Review (2007), claims that the effectiveness of tendering process impacts directly on the value for money and also, the implementation of performance evaluation stimulates the systemic documentation of every stage of the process. Owing to what precedes on one hand, and to various advantages offered by CT method on the other hand, any improvement in effective implementation of CT Process is therefore welcomed in developing countries. Apart from that, many researches were carried out on building projects performance at pre and post occupancy stages based on golden triangle (time, cost, quality); but little has particularly taken into consideration multiple and balanced other criteria and at pre-contract phase (Kogioglou, 2007).

In Chad also, CT is of prime use as prescribed by the Public Procurement Act (PPA) 503 (2003). But, many resulting contracts have failed to meet government expectations (abandoned sites or doubtful works quality) due to poor performance of tendering processes (CCSRP, 2009). As a result, more than 70% of loose of time and cost during construction phase were attributed to 'biased' award of contracts (CCSRP 2009). In addition to excessive delays registered in

Author: Building Technology Department, KNUST, Kumasi, Ghana. e-mail: sazoumata@gmail.com

contract award process, massive use of negotiations rather than competition (52%), award of many contracts to incapable contractors, projects' overprices (40%) as compared to private prices, are constantly reported as poor results of CT implementation (OCMP, 2008; CCSRP 2009). Consequently, the ineffectiveness of CT is identified as one of main concerns in public works procurement in Chad (Patrice, 2008). Furthermore, despite the reforms put in place in 2003, field survey reveals that the lack of effectiveness assessment of the tendering processes at pre-contract stage is one of the main causes of a very poor performance of public procurement. Moreover, Patrice (2008) studied specially the effectiveness of government contracts procedures in Chad but the resulting report shows that no studies have been addressing specifically the development of a management tool for assessing the effectiveness of CT Process. Therefore, the present work intends to fill this gap too.

From the foregoing, developing an appropriate tool that helps public contracting authorities to assess the effectiveness of every project at pre-contract phase will result in a substantial improvement of the performance of Competitive Tendering Process. The local construction industry also, will further benefit from it. Therefore, it is indisputable that there is a need for developing appropriate framework for assessing the effectiveness of CT Process in public works procurement in Chad.The present paper is a part of the ongoing PhD work that presents the main components of the developed framework as well as the assessment procedure.

II. Effectiveness Assessment in Public Procurement

Before reviewing assessment tools in use, it would be useful to give the working definition of some key words. According to Richard (2006), effectiveness means doing the right things and efficiency means doing the thing right whereas Performance is a means to appreciate if the organization is effective and efficient (Broeckling, 2010). Therefore, effectiveness is considered as an attribute of performance rather than its component and becomes the quality of the overall performance of a process or organization (Metawie & Giman 2005). According to Evans (2009), assessment is the act of judging, evaluating or estimating the quality of something and also a part of the management cycle that consists in measuring performance. It is an interactive process that provides information about the actual performance in order to improve the final achievement (Stefanos, 2006). In short, assessment means measurement. Indeed, the meaning of effectiveness assessment is better understood in light of performance measurement concept. In fact, performance measurement has been defined from different perspectives by different researchers with a lack of agreement on a single definition as argued Khan & Shah (2011). In spite of this, Franco-Santos (2007), found that there is an agreement among researchers on the following two features: performance measurement is (1) an evaluation system used to quantify the efficiency and/or effectiveness of an action and (2) a means to achieve certain pre-defined organizational goals and objectives. Besides that, performance cannot be directly measured. So a number of measurable indicators are used on the basis of which inferences are made about the relative performance (Strand, Paula & Erik, 2011). Therefore, performance measurement refers to the use of a multi-dimensional set of measures that includes both financial and non-financial measures, both internal and external measures (Bourne, Neely, Mills and Platts, 2003). Furthermore, performance assessment provides the basis for an organization to know how well it is progressing towards its predetermined objectives, identifies areas of strengths and weaknesses and decides on future initiatives with the goal of how to initiate performance improvements (Van-Weele, 2006). In this context, assessing effectiveness involves necessarily measuring performance and for that, these two words are used interchangeably in the course of the study. Similarly, a Measure of Effectiveness (MOE) indicates how well a system tracks against its purpose or normative behavior. According to Richard (2006), effectiveness could be measured in two different ways: goal-centered view and system-resource view. The goal-centered view is concerned with assessing the organization with respect to its task objectives by finding the difference between performance and objectives. In system-resource view, effectiveness is concerned with resource viability. For the assessment of a process' effectiveness, these considerations should converge as recommended Richard (2006). Therefore, effectiveness measures can be defined in a binary manner (e.g. goal achieved or not achieved) or by specifying a percentage by which the goal has been achieved (e.g. 82% in an assessment). In addition, Bourne et al. (2003) asserted that effectiveness assessment cannot be done in isolation for it is only relevant within a reference plan (Baseline) against which the efficiency and effectiveness of action can be judged. Watermeyer (2013), stated that in the effectiveness assessment process, the starting point is to clearly define objectives and expected outputs/outcomes as well as time lines, cost and levels of quality; then, perform activities and collect data; the end point being to compare the projected outputs/outcomes against the actual ones. In other words, effectiveness assessment process is achieved through setting specific goals and objectives, prescribing the expectations through formalization of rules and roles, and monitoring conformance to these

expectations before concluding (Van-Weele, 2006).Hence, Effectiveness is merely the way of performing pre-established activities to produce the expected output at a high level of achievement. From the foregoing, it can be concluded that effectiveness assessment process starts by setting a baseline including target values (specific expected goals and objectives), selecting relevant criteria and related key indicators; then performing activities, collecting data about relevant criteria, assessing the performance by using measurable predetermined indicators, and finally comparing the actual results to the expected.

In construction industry, Kagioglou, Cooper &Aouad (2007), found that performance assessment is approached in two ways: in relation to the product as a facility, and in relation to the creation of the product as a process. Consequently there are two general types of performance measures: results measures and in-process measures. Results measures which track outcomes after the fact, measure only success or failure of the project, and are not sufficient to assess the 'true' performance of construction projects. Moreover, results measures provide historical or inaccurate information that can be inconsequential for the assessment or may mislead decision-making argued Hoover & Schubert (2007). This is very much unlike in-process measures which track leading indicators and anticipate potential problems before they happen (Kagioglou et al., (2007). More specifically, Watermeyer (2010), stated that assessing the effectiveness of a procurement process begins with the identification of project milestones to be reached, activities to be undertaken, products to be delivered, and/or projected costs likely to be incurred in the course of attaining a project's final goals. Hence, the degree of difference from the expected results is used to evaluate effectiveness that can be qualified as success or failure (Teelken & Smeenk, 2003). However, considering international standard practices, tendering process effectiveness assessment is no more limited only to time, cost and quality but is extended to other criteria such as transparency, fairness, equity, integrity, accountability, compliance with regulations, and openness of the competition which constitute nowadays the main concerns as far as public procurement is concerned.

To develop the intended framework, a conceptual framework grounded on a multi-criteria effectiveness assessment approach using 'in-process measures' employing seven criteria and thirteen key measurable indicators, is adopted. Thus, a reference plan or baseline including 38 Standard common practices of CTP in developing countries is defined. Seven (7) relevant criteria that are Fairness & Equity, Competitiveness, Compliance to laws and regulations and Conformity to rules & procedures, Transparency & public Accountability, Ethics (Integrity and Confidentiality), Time Effectiveness, and Cost Effectiveness are identified. Thirteen (13) Key Measurable Indicators (KMIs) that are established as follows: Time for tender preparation, Time for tender preparation, Time for tender preparation, Applied Rate of Margin of Preference, Number & Nationalities of Bidders, Degree of Competitiveness, Advertisement total duration, Publicity frequency, Publicity extent, Time Performance Index, Cost Estimate Accuracy, Approvals Compliance Rate, Documentation Compliance Rate, Capacity Qualification Ratio, and Number of complaints or requests generated. The Table 1 in the next page presents these key indicators and their relative target values that will be used in assessing the performance. And, the competitive tendering process was divided into five (5) critical phases as follows: tender planning phase, tender documentation phase, tender solicitation phase, tender evaluation phase and pre-award phase.

Table 1 : Key Measurable Indicators with Target values

Rank	Indicator's designation	Brief description of Indicator	Formula / Expression Unit	Target values
1	Time for tender preparation	Is the actual time the last tenderer get for bid preparation	(Date of bids submission – Date of last tender documents sold); In days	≥ 45 days
2	Advertisement total duration	Actual duration of the tender announcements	(Date of last announcement –Date of first announcement); In days	≥ 15 days
3	Number & Nationalities of Bidders	Combined Number of national bidders and Foreign bidders	(National Bidders + Foreign Bidders) / 2 ; Numerical number	≥ 5
4	Publicity frequency	Frequency of advert diffusions/publication in a week	How many times the advert was published in a week; Numerical number	≥ 2 times
5	Time Performance Index	Is the actual ratio of the time performance and time allocated for the phase	(Time performed / Time allocated) ; Numerical number	≤ 1
6	Number of complaints or requests generated	Expresses a sort of bidders' satisfaction	Number of formal complaints or requests for clarification registered; Numerical number	= 0
7	Cost Estimate Accuracy	Is the actual variations of estimates as compared to initial budget	[(Initial Budget – Actual Estimate)/Initial budget]x100; In percentage	> 0 and < 15%
8	Publicity extent	Number of different media used for advertisement	Number of News-paper, radio, TV, Internet, Numerical number	≥ 3 media
9	Approvals Compliance Rate	Is the actual ratio of required approvals and performed approvals along the process	(Approvals performed / Approvals required) x 100; In percentage	= 100%
10	Degree of Competitiveness	Expresses variations among of bids' prices	[(High bid - Low bid) / Winner Bid] x 100); In Percentage	≤ 10%
11	Documentation Compliance Rate	Is the actual ratio of the total number of documents required & recorded and provided along the process	(Recorded Proceedings provided / proceedings required) x 100 ; In Percentage	= 100%
12	Applied Rate of Margin of Preference	Actual rate used for that particular project as compared to the prescribed	Applied fraction of the prescribed Margin of Preference; In Percentage	≤ 10 %
13	Capacity Qualification Ratio	The level of Capacity qualification (appropriate profiles via CVs)	(Qualified members / Non-qualified members) ; Numerical number	≥ 1

III. Method

The study adopted quantitative approach with questionnaire as data collection instrument. A questionnaire was designed using Analytic Hierarchy Process (AHP) approach (Saaty 1990). It was pre-tested and reviewed before final data collection. Respondents are asked to pair-wise compare the identified variables using the following simplified AHP scale of 5 points: 1 = Equal Importance, 3 = Moderate importance, 5 = Strong importance, 7 = Very strong, and 9 = Extreme Importance. As mentioned earlier, the first step was to identify criteria and related key measurable indicators that are relevant in characterizing an effective CTP. In line with the AHP approach, the next step is to establish their respective weights on the overall effectiveness. For that, there are some Multiple Criteria Decision Analysis (MCDA) methods for calculation of these weights but the most popular in industrial performance measurement systems are MACBETH (Measuring Attractiveness by a Categorical Based Evaluation TecHnique), Fuzzy Logic (FL), and AHP (Clivillé, 2004; Berrah et al., 2006; Saaty, 2008; Tavakkoli-Moghaddam, 2012). AHP is an emerging method to evaluate performance because an earlier survey provided over 200 known applications in the evaluation of the overall performance (Forman and Gass, 2003; Yang and Shi, 2002; Zahedi, 1986). Since

the research aims at assessing the overall effectiveness of CT using seven criteria and thirteen indicators, so, it is a suitable application. Moreover, AHP is selected for many other following reasons: (1) It uses hierarchy with many levels and permits to calculate mathematically 'Priority Vectors' or Weights' at different levels of the hierarchy; that fits perfectly the nature of the problem under study (criteria and related indicators). (2) Rather than qualitative judgments like MACBETH and FL, AHP uses scales of figures that are directly computed without transformation; that can reduce subjectivity at the same time increase objectivity. (3) It uses the Weighted Mean as aggregation operator at the top level of the hierarchy. (4) Calculations can be done by Excel without a specific software package. (5) AHP is open for adaptation and has many modified versions, and still gives reliable results. (6) It is popular and commonly adopted in industrial sector. (7) It has gone through many criticisms, still is giving absolute satisfaction in many areas of multi-criteria decision making. Of course, some concerns have been raised regarding AHP for the arbitrary ranking occurred when two or more alternatives have similar or quasi-similar characteristics (Triantaphyllou and Mann, 1995), or the rank reversal caused by the addition or deletion of alternatives (Dyer, 1990; Perez, 1995; and Tversky& Simonson, 1993). These undesirable effects, however, do not invalidate the AHP method, argued Harker & Vargas (1987) and Saaty& Vargas (1993) and Triantaphyllou and Mann (1995). In fact, ordinal aggregation methods exhibit rank reversal and it has been shown that the rank reversal will not be a problem in real world applications because it is very rare to encounter two alternatives with very similar or same characteristics. In such case, special precautions (e.g., grouping similar alternatives) can easily be taken to avoid any rank reversal (Saaty, 1990). Meanwhile, it is noted that the current study cannot be affected by this problem because it does not focus on alternatives selection but on the weights of variables that affect the overall performance.

The targeted population comprises 60 structures including public procurement entities, consulting firms, contractors, and sponsors. The total population was considered as sample. The analysis tool is an adapted AHP model involving nine following steps : Establishment of specific goal & objectives as well as the baseline (Step-1), Identification of relevant criteria and key related measurable indicators and corresponding target values (Step-2), Construction of AHP Hierarchies (Step-3), Collection of pair-wise comparisons from experts and Verification of the Consistency of respondents (Step-4), Computation of Geometric Means of the consistent ratings and construction of a single pair-wise comparison matrix (Step-5), Computation of weights of Phases, Criteria & Indicators, and also Lambda max, Consistency Index (CI) and Consistency Ratio (CR) for results testing (Step-6), Computation of Composite Weights and Ranking of Key Indicators (Step-7), Calculation of Elementary Effectiveness at each phase (Step-8), and Calculation of the Overall effectiveness of the whole CTP for the contract award (Step-9).

Of the 60 questionnaires administered, 38 valid completed questionnaires were returned representing 63.32%. The majority of respondents (60.52 %) are construction professionals holding either Bachelor in Science degree (15.80%) or Master degree (84.20%). This means that the results represent the opinion of high qualified construction professionals. Not only that, respondents with more than 10 years of experience in the public works procurement practices have scored 71.05 %, indicating that the results represent the point of view of experienced construction professionals. Moreover, the Consistency Ratios (CR) varying from 0.00 to 0.055 (< to 0.10) are indicating that respondents were very consistent with their rating and results can be considered valid.

IV. Developed Framework

Using the adopted conceptual framework for assessing the effectiveness as described earlier, the quantification of the performance expression can be viewed as a procedure which, in a first step quantifies the elementary performances, the second step then consists in their synthesis in an overall performance thank to aggregation operator (Berrah et al., 2004 and Clivillé, 2004). For illustration, a graphical model of the developed framework is proposed in Figure below. The model consists of a systematic sequence of six (6) steps involving assessment of elementary effectiveness of the five phases, one after another in ascendance, and the overall effectiveness for the whole process. With respect to specifics of every phase, Key Measurable Indicators (KMIs) are distributed as follows per phase: Phase 1 six indicators, Phase 2 five indicators, Phase 3 six indicators, Phase 4 seven indicators, and Phase 5 seven indicators. See the Figure 1 below for illustration.

The developed framework is divided into six main components: Five (5) distinct sheets corresponding to the five phases including each of the following elements: input and expected output, critical points and issues to look at, standard practices to follow, useful data and documents to provide, specific key indicators to use; and finally the table of assessment of Elementary Effectiveness (ei). One sheet summarises the overall effectiveness assessment including the final decision of the contracting authority.

The Assessment Procedure involves the following steps:

a) Examine the quality of the input under assessment,
b) Find out if the critical points and issues are properly addressed,

c) Check the conformity of performed practices to standard practices required,

d) Get the actual measures through analysis of collected documents & data on the process,

e) Compare actual measures to target values and use the differences to score the performance of each indicator using the scoring system below.

f) Get the actual weighted effectiveness value by multiplying the performance value by the weight of the indicator,

g) Get the elementary effectiveness (ei) by summing up the individual indicators weighted values and divide it by the sum of their weights,

h) Get the Overall Effectiveness (E) by summing up the five elementary effectiveness values.

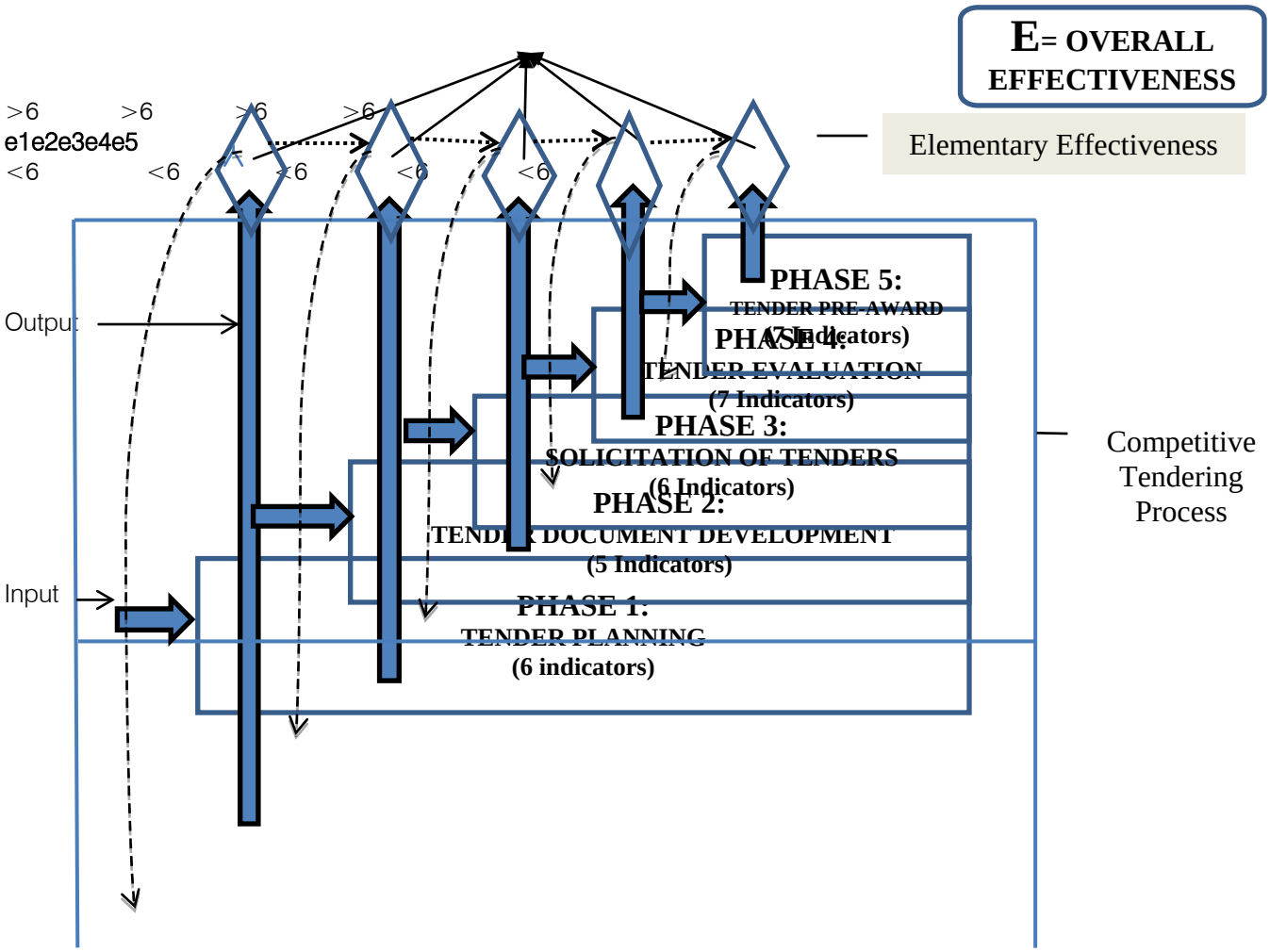

Figure 1 : Graphical model of the developed framework

The adopted scoring system uses the AHP scale of 0 to 9 corresponding to the following qualitative appreciations in Table 1:

Table 2: Indication of scoring or marking system

Qualitative appreciation	Marks
Perfect	8.0 – 9.0
Excellent	7.0 – 7.9
Very good	6.0 – 6.9
Good or acceptable	5.0 – 5.9
Fair	4.5 – 4.9
Not acceptable	2.5 – 4.4
Nil or worthless	0.0 – 2.4

It is important to note that figures in the above table are an indication and therefore must be handled with flexibility. For example, when the actual measure of the indicator equals to or better than the target value, the score is 9. When the actual measure is less than the target value, the proportionate scale or 'pro rata' needs to be applied to achieve the mark. Ultimately, latitude is given to the assessor to appreciate and mark according to his conviction. The value nine (9) may be considered as target value that has to be attained by every project through a functional tendering process. In the scale of marks proposed above, the figure 6 corresponds to very good; that is why, when elementary effectiveness (ei) is

< 6, the process has to be re-done. ifei ≥ 6, the process continues to the next phase. When overall effectiveness E is < 6, the whole CTP process is to be cancelled; if E ≥ 6 the contract is awarded to the winner. Lastly, when data are not available or missed or even unreliable, the assessor has to judge and score based on his experience.

Target values are most often provided in laws and regulations of every country. Thus, they may vary strongly with the nature and the surrounding context in which the project is planned as well as objectives to achieve. Some target values are explicit (e.g. time) whereas others are implicit or interpreted or simply inferred (e.g. % of savings). Target values displayed in Table 7.2 are extracted from Chadian context. Also, this table gives full description of established Key Measurable Indicators and their expressions.

The elementary effectiveness assessment follows 3 steps. First, compare collected data to target value and score the actual measure of the Indicator accordingly. Second, the actual measure of an indicator is multiply by its weight to get a weighted value of considered indicator. Third, the sum of weighted values is divided by the sum of indicator's weights to give the score of the elementary effectiveness. As explained earlier, if **ei**< 6, the process has to be re-done; if **ei** ≥ 6, the process continues to the next phase. The assessment of the overall effectiveness **(E)** follows also 2 steps. First, the actual measure of elementary effectiveness is multiply by its weight to get a weighted value of the considered phase. Second, the sum of the weighted **ei** values gives the Overall Effectiveness. Again as explained earlier, if **E**< 6, the whole process is cancelled; if **E** ≥ 6 the contract is awarded to the winner.

V. Results Discussions

According to Patrick (2010), procurement performance in construction sector has been attracting great attention from practitioners, academicians and researchers since 1930. As a result, many instruments were developed including Prior-approval or Non-objection mechanisms, Internal control, Independent or External audit, Pre-award risk analysis, Pre-award survey, Pre-contract Effectiveness Audit, Public Procurement Model of Excellence (PPME), and Country Procurement Assessment Report (CPAR) etc... (Adjei, 2012, Agbesi 2009, UNICITRAL, 2004). In fact, as stipulated in public procurement laws, documents like annual procurement plan, project brief, project design & budget, tender documents, tender evaluation report and provisional tender award are all subject to prior approvals by entitled authorities before publication or implementation (see PPAs of Senegal, Cameroun, Chad, Ghana, Rwanda, Uganda, and Kenya). Although approval mechanisms are put in place, they do not function as they ought to as far as the public funds are concerned except where non-objections are mandatory. As results, many governments have to recourse to independent firms to audit public procurement operations; yet any tangible improvement has been observed. Thus, for the purpose of the present study, three groups of the above instruments are briefly discussed below to demonstrate the need for an appropriate assessment tool of effectiveness of public contract award process.

a) Pre-award risks analysis/survey or Pre-award Effectiveness Audit

According to the Construction Industry Development Board – CIDB (2006), Pre-award risks analysis is a means of assessing all risks involved of awarding the contract to a particular bid winner. Then, conclusions are inserted in the evaluation report to inform the final decision. However, Pre-award survey is required only when information on hand or readily available to the contracting authority including information from commercial sources, is not sufficient to make a beneficial decision or when a contract administration office becomes aware of a prospective award to a contractor about which unfavorable information exists or when the prospective contractor is debarred, suspended, or ineligible (US/GAO, 1987; RPPA, 2010). Pre-award survey is also used casually as a verification means whose output can disgrace or credit a contractor alone and fails to assess the procurement institutions and processes. Pre-contract Effectiveness Audit is another means for evaluating a prospective contractor's proposed rates and related internal cost structure before actually agreeing and signing the subsequent contract (Moro, 2011; US/GAO, 2009; Matthew, 2012; CCCA, 2012). Its implementation in USA and Ghana has saved about 20% of initial bid price (Moro, 2011; Agbesi, 2009). But, like an audit, it is solely focused on cost criterion and the output may disgrace or credit a contractor alone. Also, pre-contract effectiveness audit fails to assess the procurement institutions and processes. Therefore, it does not fit for assessing the effectiveness as proposed by the present study.

b) Public Procurement Model of Excellence (PPME)

PPME is a software developed by OECD since 2002 to facilitate the collection of data in order to measure the quality of procurement system at the level of procurement entity. Its objectives are: (i) to help in the implementation of a change process to improve procurement at entity, regional & national levels; (ii) to provide objective information for assessing the conformity of the procurement process to the requirements; (iii) to evaluate performance of procurement at various levels and provide recommendations to improve the process; (iv) to lead to

the certification of the procurement entities within the country. The PPME uses 80 key performance criteria and provides two reports: an assessment report on the performance of a particular entity and a comparative assessment results reports Adjei, (2005). According to Agbesi (2009), the software was piloted in Ghana in 2006 and has been used to assess more than 200 entities. And so far, results show significant progress in the performance of public procurement as well as the impact of the Act 663 admitted Adjei, (2010) and Frimpong et al., (2013). Besides that, it has the merits of achieving the assigned objectives by providing managers at all levels with both an analytical tool to compare results and a list of recommendations to improve performance asserted Adjei, (2010). Though PPME exhibits features that comply with the concept of performance measurement system and even covers tendering processes at pre and post-contract stage, it however fails to tell the level of Effectiveness attained by a particular contract even if it is effectively processed. Another weakness is that PPME uses results measures and therefore lagging indicators. Not only that, it is goal centered (focus on entities) rather than process centered. Therefore, it is significantly different from the developed framework.

c) Country Procurement Assessment Report (CPAR)

CPAR is an analytical tool designed under the auspices of WB, OECD and UNICITRAL in 1990s and is used to diagnose a particular country's procurement system in order to generate a dialogue with the government. The CPAR stands on four pillars: legal framework, institutional framework and capacity, procurement operations and practices, and integrity of the procurement system (OECD, 2004). It uses 12 indicators and 54 sub-indicators distributed into two main components: Base-Line Indicators (BLIs) and Compliance & Performance Indicators (CPIs). The outputs of CPAR are essentially two tables and the adopted scoring system uses a scale of 0 to 3. With times, CPAR has become an important requirement before committing to lending and it has the merits of being worldwide accepted and applied (Rogati et al., 2004). Its methodology is regularly reviewed and complies perfectly with the performance measurement concept and principles. However, as there are no agreed International Procurement Performance System that can be applied equally to all countries, the CPAR is limited to a short term objective that is to find out the degree to which the country procurement system is following its own regulations. Besides, the perception of compliance (especially where the indicator cannot be measured quantitatively) differs from one country to another as demonstrated by Sanchez et al. (2009), who also assert that indicators alone cannot give a full picture of a whole procurement system that is by its nature complex. Indeed, some indicators are not amenable to hard measurement in terms of facts and figures and assessing their performance is better accomplished through surveys or interviews with participants in the systems such as professional associations, civil society representatives, independent experts, and government officials (Sanchez et al., 2009). Another issue is that reliable data may not be available in public administrations to the extent asked for in order to satisfy all the 54 compliance & performance indicators. Again, after data collection, validating the results to arrive at the "right score" remains another problem to solve. Worse, the implementation of a CPAR demands a lot of financial and human resources and more often, it is undertaken with exterior financial and capacity supports. Lastly, recommendations made are rarely implemented and always every CPAR implementation is like a re-starting exercise. Once again, CPAR is different from the proposed framework which is fully described thereafter.

In short, the review above has shown that governments are using various but sectorial assessment tools with more or less satisfactory results. Although, it has been proven that some tools are yielding financial benefits despite some weaknesses or limitations; yet some shortcomings have been identified. In addition, the plethoric number of indicators and sub-indicators does not facilitate their understanding and adoption in the field. Furthermore, there is still a constant need for more effective control instruments, reporting mechanisms, investigation methods and best practices as far as PP is concerned argued Patrick, (2010) and Cornela et al., (2011). Lastly, none of these tools is formally adopted for assessing systematically the overall Effectiveness of tendering operations at every procuring entity level for every individual construction project. Therefore, there is obviously a knowledge gap that the developed framework could bridge. To back up the description of the developed framework, an example is given below to demonstrate its practical application.

VI. Example of Application

a) Tender Planning

Measurable Indicators	Target Values	Actualm easures	Assess. Score(X)	Weigh ts (Ki)	Actual Values (X*Ki)
1.Time Performance Index	≤ 100%	120%	5	0.077	0.385
2. Cost Estimate Accuracy	≤ 100%	90%	8	0.065	0.520
3. Publicity extent	≥ 3	2	7	0.059	0.413
4. Number of approvals and controls performed	= 100%	100%	9	0.051	0.459
5. Documentation Rate	= 100%	50%	4	0.037	0.148
6.Capacity Qualification ratio (Project team)	= 100%	30%	3	0.013	0.039
Sum =				*0.302*	*1.964*
Elementary Effectiveness at phase 1 (e1) = 1.964 / 0.302 =					*6.503*

b) Tender Documents

Measurable Indicators	Target Values	Actual measures	Asses. Score (X)	Weights (Ki)	Actual Values (X*Ki)
1.Time Performance Index	≤ 100%	90%	9	0.077	0.693
2.Cost Estimate Accuracy	≤ 100%	80%	6	0.065	0.390
3.Number of approvals and controls performed	= 100%	100%	9	0.051	0.459
4.Documentation Rate	= 100%	80%	7	0.037	0.259
5. Capacity Qualification ratio (Tender commit.)	= 100%	25%	3	0.013	0.039
Sum =				*0.243*	*1.840*
Elementary Effectiveness at phase 2 (e2) = 1.840 / 0.243 =					*7.572*

c) Tender Solicitation

Measurable Indicators	Target Values	Actual measures	Assess. Score (X)	Weights (Ki)	Actual Values (X*Ki)
1.Time Performance Index	≤ 100%	115%	6	0.077	0.462
2. Advertisement total duration	≥ 21 days	22 days	9	0.148	1.332
3.Publicity Extent	≥ 3	4	9	0.059	0.531
4.Publicity frequency	≥ 3	2	7	0.085	0.595
5.Number of requests of clarifications	= 0	2	7.5	0.073	0.548
6.Time allocated for tender preparation	≥ 60 days	75 days	9	0.169	1.521
Sum =				*0.611*	*3.468*
Elementary Effectiveness at phase 3 (e3) = 3.468 / 0.611 =					*8.165*

d) Tender Evaluation

Measurable Indicators	Target Values	Actual measures	Asses. Score (X)	Weights (Ki)	Actual Values (X*Ki)
1.Number and Nationalities of Bidders	≥ 5	4	8	0.145	1.160
2.Time Performance Index	≤ 100%	75%	9	0.077	0.693
3.Cost Estimate Accuracy	≤ 100%	95%	8.5	0.065	0.552
4.Degree of Competitiveness	= 100%	96%	8	0.044	0.352
5.Applied Rate of Margin of Preference	≤ 10%	0%	9	0.034	0.306
6.Capacity Qualification Ratio	= 100%	15%	2	0.013	0.026
7. Documentation Rate	= 100%	100%	9	0.037	0.333
Sum =				*0.415*	*3.422*
Elementary Effectiveness at phase 4 (e4) = 3.422 / 0.415 =					*8.246*

e) Tender Pre-Award

Measurable Indicators	Target Values	Actual measures	Assess. Score (X)	Weights (Ki)	Actual Values (X*Ki)
1.Time Performance Index	≤ 100%	98%	7.5	0.077	0.578
2.Number of complaints or litigations generated	= 0	2	7.5	0.073	0.548
3.Cost Estimate Accuracy	≤ 100%	90%	8	0.065	0.520
4. Publicity extent	≥ 3	2	7.5	0.059	0.442
5. Approvals Compliance Rate	= 100%	75%	7	0.051	0.357
6. Documentation Compliance Rate	= 100%	75%	6	0.037	0.222
7. Capacity Qualification Ratio (Award commi.)	≥ 100%	50%	6	0.013	0.078
Sum =				*0.316*	*2.745*
Elementary Effectiveness at phase 5 (e5) = 2.745 / 0.316 =					*8.687*

f) Overall Effectiveness Assessment

Main Phases	Elementary Effectivenesses (X)	Weights (Kp)	Actual Values (X*Kp)
1. Tender Planning	6.503	0.363	2.360
2. Tender Documentation	7.572	0.261	1.976
3. Tender Solicitation	8.165	0.161	1.314
4. Tender Evaluation	8.246	0.137	1.130
5. Tender Pre-Award	8.687	0.079	0.686
Sum =		*1.000*	*7.466*
Overall Effectiveness E = 7.466 / 1.000 =			*7.466*

Briefly, according to our scoring system, all the calculated **ei**s are over 6 hence are very good and E is 7.466 meaning that the Effectiveness level is 7.466 / 9 = 0.823 or 82.3 % which is Excellent. So, the contract is awarded to the recommended winner.

VII. Conclusions

The literature review has shown that governments are using various means with more or less satisfactory results. Although some are yielding financial benefits despite their weaknesses and limitations, none of them is formally adopted for assessing systematically

the overall Effectiveness of tendering operations at every procuring entity level for every individual construction project. Therefore, the present study was undertaken with the objective of developing a framework for assessing the effectiveness of CT in Chad. Indeed, effectiveness assessment process involves setting a baseline of standard practices, establishing relevant criteria and related measurable indicators including target values, then perform activities, collect data, assess the performance by comparing actual results to the expected, and finally draw the level of effectiveness. So, after defining a baseline 38 standard practices, the study has established five critical phases, seven relevant criteria and thirteen indicators. Based on these findings, a framework was developed comprising six components. The assessment process involves the assessment of elementary effectiveness at each phase using corresponding weights of key measurable indicators as well as the overall effectiveness using weights of different phases. An application example is given using a scoring system of 0 to 9. In conclusion, the developed framework is a practical tool for evaluating the overall effectiveness of CTP that informs decision makers to decide objectively when awarding contract that can be implemented in Chad and other developing countries. Not only that, the developed framework bridged a knowledge gap revealed by the literature review. Besides, the study demonstrated a practical application of AHP in the evaluation of the overall performance in public works procurement. For further research, the study made the following recommendations: (1) its implementation in the real world for validation; (2) its computerization for easy usage, (3) development of usage manuals for End users, Assessors and Contracting Authorities.

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