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CRITICAL REVIEW OF QUALITY-BASED SELECTION OF CONSULTANCY SERVICES IN COMPLEX PROJECTS

M. Tariq, S. Fawad

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By

M. Tariq[1], S. Fawad[2]

When selecting a consultant for a new project its very challenging to choose them based on who is least expensive or the most qualified. Abnormally low bids and consultants' opportunistic bidding behaviour are frequently observed in the competitive bidding system. Many research findings have pointed out that price competition itself is not sufficient to guarantee the economical and good quality products. The quality-based selection (QBS) system has been proposed as a potential solution to this problem. Few studies have analysed consultants' pricing behaviour under the QBS system and the effects of the QBS system on market competition. In this paper, QBS system is critically reviewed to assess its potential especially in complex projects to encourage consultants to place more emphasis on project quality rather than compromising it over pricing to stand lowest if the price is included as one of the selection criteria.

Every project is unique and has its own challenges. At the outset of many projects, it is difficult for the officials to fully grasp the complexities involved or the variety of the Consultancy Services required to develop an appropriate solution. Project officials have a broad set of criteria that they examine for procurement of consultancy services. Ahmad et al. (1988) studied that bidding decisions are greatly influenced by subjectively evaluated criteria, such as type of job, location, size of job, need for work, Owner, subcontractors, degree of hazard, and degree of difficulty. Competition and profitability, although significant, are not the top ranked factors.

Consulting firms provide specialized knowledge, unbiased and independent engineering judgment, broad experience and the creative and innovative application of modern scientific and engineering techniques and practice. A consulting firm may work for government, commercial or industrial clients directly or as part of a design team.

The dominant factor in selecting a consulting firm is its quality /qualifications to solve the specific set of problems under consideration. Quality /qualifications are a reflection of the firm's experience, staff, integrity and reputation; concept of the project; and knowledge of local conditions.

The Consultants provide;

- An efficient allocation of services (time and cost)
- Specific expertise

1 General Manager, Central Contracts Cell, WAPDA

2 Addl. Chief Engineer, Central Contracts Cell, WAPDA

- Transfer of skills & knowledge to the client staff
- Independent advice

In the process, all firms are allowed to participate and are evaluated on all criteria. Thus, the process provides an open competition for all interested parties. However, when low-price is a selection criteria (even if only weighted at 10%) when hiring professional services firms such as those in management consulting, the research clearly illustrates that buyers pay more by forcing proponents to focus on reducing the initial price at the expense of long-term value, user satisfaction, safety and innovation. The solution to this problem is QBS, a procurement method that focuses only on a firm's metrics, such as expertise and past performance. This system was first introduced for architects and engineers in the United States in 1972 via the Brooks Act (Chinowsky, et al, 2009)

In Pakistan, PPRA's Procurement of Consultancy Services Regulations, 2010 are mandatory for all the government departments to follow in procurement of consultancy services(PPRA-2010).

> ***PPRA –Procurement of Consultancy Services Regulations, 2010***
>
> *S.R.O. (1)/2010- In exercise of powers conferred by section 27 of the Public Procurement Regulatory Authority Ordinance, 2002 (XXII of 2002), the Public Procurement Regulatory Authority is pleased to make the following regulations namely**:*
>
> ***Regulation 1. Short title and commencement***
>
> *These regulations may be called the Procurement of Consultancy Services Regulations, 2010.*
>
> *They shall come into force at once.*
>
> *** as further quoted throughout these guidelines*

Employment of consultants for the foreign funded projects is mandatory under the prevailing rules of those funding agencies such as World Bank and Asian Development Bank etc. Major national executing agencies adopted the specific selection process because normally according to Lender Agencies' rules selection of consultants is the responsibility of the borrowing agencies. Pakistan Engineering Council (PEC) took some time to formulate the Byelaws for regulation of Professional Conduct and Practice of Consulting Engineers which was approved by the Government in 1986. Observation of these Byelaws is mandatorily for procurement of Consultants' Service by all federally controlled entities. Further, PEC has formulated Standard Contract Documents and Guidelines for Procurement of Services and Works which provide detailed instructions for short listing/pre-qualification as well as selection of consulting firms for procurement of consultancy services in the engineering field (PEC-2007).

General Considerations in Selection of Consultants

Normally, the procuring agency is responsible for the selection, engagement and supervision of consultants. Though the guidelines to be followed for selection/hiring

consultants depend on the circumstances of the particular case, the following six main principles are usually considered during selection process of consultants:

i. High-quality services;
ii. Value for money/economy and efficiency;
iii. Fair and open competition among the eligible and qualified consultants;
iv. Transparency in the selection process;
v. Accountability; and
vi. Focus on the code of ethics (conflict of interest).

whereas essential activities that has to be followed for selection of consultants in a professional manner includes the following:

i. Prequalification/Shortlisting of consulting firms/Joint Ventures/ Consortium of firms.
ii. Drafting the Terms of Reference after defining the scope of services.
iii. Estimating the consultants time input required for the assignment and computation of costs for budgetary provisions.
iv. Drafting the Request for Proposal (RFP) Document which would essentially contain:
    - Letter of Invitation (LOI);
    - Instructions to Consultants (ITC) for preparation of Technical/Financial Proposals and how to address other issues; and
    - An LOI Data Sheet which complements the LOI by providing project specific information not covered in the ITC/LOI. It essentially contains but is not limited to information about:
        a) The project;
        b) Consultants time input or the cost;
        c) System of selection; and
        d) Evaluation criteria.
    - Standard Forms for:
        a) Preparation of Technical Proposals;
        b) Preparation of Financial Proposals
v. Evaluation of Technical Proposals and opening of Financial Proposals as required under the specific system of selection; i.e. Quality Based Selection/Quality and Cost Based Selection System (QBS/QCBS), and finalization of ranking of Proposals; and
vi. Negotiation of Consultants Contract and Award/Signing of the Contract.

Pre-qualification and consequently shortlisting

Pre-qualification and consequently shortlisting of consulting firms is the first major step in the selection process. It is meant to limit the number of firms for participation in the final selection process from among those who are eminently qualified on the basis of their past experience in similar assignments and available professional manpower employed by these entities/other resources. It involves four steps, which include:

i. A notice in the press and Pakistan Procurement Regulatory Authority (PPRA) website or other forum(s) to seek Expression of Interest by the prospective firms.

ii. Prepare Expression of Interest (EOI) Documents including specific Application Forms for submission of requisite data/documents by the Applicant Firms.

iii. Evaluation of Applications received from the interested firms/consortia.

iv. Grading of Applications and selection of Firms/Consortia for inclusion in the shortlist.

Terms of Reference (TOR)

Terms of Reference is the statement through which the Clients provide detailed description of services/duties to be performed by the consultants. Since this is the basis on which consultants prepare their Proposals hence it must be clear & complete yet concise. This is the most important document because it also forms part of the final agreement between the Client and Consultants and so referable from inception of project to the completion of services/project implementation. It, *inter-alia*, provides information under the following heads:

a) Objectives of the project which provides information about the final deliverables at the end of the assignment.

b) Scope of Consultants' Services which include the Type of Services, in what disciplines, the quantum of total and individual Key Personnel's time input, probable tasks involved during the assignment, probable phasing of tasks and activities involved in the process.

c) Type, quantum and duration of expertise including qualification of staff, weightages for evaluation and minimum experience required from the firms/consortia.

d) Reporting requirements/deliverables by the consultants has to be stated.

e) Other heads under which information is required is institutional arrangement during implementation, training if needed and clients' contribution to the consultants' in the form of facilities etc.

Estimation of Consultants' Input/Costing

1. The computation of time input of consultants is a complex exercise which requires in depth knowledge and experience in project implementation within the department. The first important step in the process is a mental simulation by the drafter(s) to visualize the steps/activities/sub-activities which are mandatory for carrying out the assignment.

2. After listing of activities/sub-activities the drafter(s) shall have to visualize and decide about the minimum time period for completion of the specific activity. They also need to establish the inter-relationships between various activities and also about status of any activity being critical. After a decisions/finalization of time periods etc. for each activity, the drafters will proceed with drafting of the Activity Schedule.

3. The Activity Schedule is the most important and basic document which helps finalize the requirements for various types of expert services to complete the listed activities leading to formation of a team of Key Professionals/other professional support staff to finalize the Team of various cadres of professionals in specific disciplines. The input of each professional is computed accordingly culminating in the Total Man-Month effort to be procured from the Consultants.

4. Once the time input/Man-Months numbers are finalized the cost of services for the remuneration portion can be computed by multiplying the number of Man-Months of each professional with the prevailing average billing rate of that level of professional. Billing rate is a factor of additions/multiple of various elements which include the Gross Salary of the individual plus the Social Charges payable to the individuals (normally as a percentage of Gross Salary), which are multiplied by the percentage figure of overhead costs certified by independent auditors. Total of the Gross Salary plus Social Charges plus the Overhead cost are multiplied by a percentage figure which is in vogue as Fee. This figure is the profit of consultants before taxation. The total of all these elements is the billing rate.

5. The second part of cost is the Direct/out of Pocket expenses to provide for the requisite furnished space for office, office equipment, transport vehicles, communication cost, office materials etc., cost of utilities and non-professional support staff. The Direct cost is only an estimate of cost expended on behalf of the client and reimbursed accordingly on submission of the expenditure bills by the consultants.

6. The third item of cost is a minor provision as contingencies which is only a notional figure to cater for the unforeseen costs, the inflationary effects in cost increases in the Remuneration/Direct Costs.

Drafting of Letter of Invitation (LOI)/Request for Proposal (RFP)

- All Guideline documents prepared by various agencies contain standard/detailed instructions for preparation of the Technical and Financial Proposals supplemented by a Data Sheet. The project specific information is filled in the Data Sheet to supplement the LOI/ITC. The most important items to be included in the Data Sheet are:

    a) Description about the Project/its components

    b) Estimate of the time input of Key Professionals and other Staff Members

    c) Minimum acceptable qualifications of the key Staff

d) System of selection (i.e. QBS or QCBS) of consultants and weightage for Technical and Financial aspect if it is to be the QCBS process.

e) Evaluation criteria for evaluation of Technical Proposals

f) A set of Forms for preparation of Technical and Financial Proposals.

Evaluation of Technical Proposals

The Technical Proposals are evaluated applying the criteria provided in the RFP, however, the evaluation committee may fine-tune it to meet the finer details of the assignment at hand. The three Major heads under which credit is awarded, are:

a) Qualification/experience of the Firm(s)

b) Approach, Methodology and Work Plan proposed for the assignmentby the proposing firms and

c) Quality of the Key Professional Staff which essentially takes into consideration the academic/general qualifications and experience of the individual relevant to the specific assignment plus other optional elements.

The total score awarded to each proposer under the afore-listed heads is the basis for ranking of the firms/consortia. In case of QBS the top ranked firm is invited for Financial/Contract negotiations. However in case of QCBS the final ranking is made after considering the total proposed cost by the firm using the weightage provided in the RFP/Data Sheet. These weightages for Technical and Financial aspect is in the ratio of 80:20respectively.

Negotiation of Consultants Contract

Forms of Contract are made part of the RFP and these govern the drafting of the contract. However, if consultants have shown any kind of reservation about the TOR or the Conditions of Contract these are discussed/agreed and adopted. Prior to negotiation meeting between the parties the clients finalize their points for discussions as well as a formal agenda, which generally contains following items (Jawaid-2012):

a) Opening remarks by the leaders of the two teams.

b) Verification of formal authorization submitted by the consultants.

c) Discussion of the Terms of Reference for its adequacy especially in the light of consultants' comments on the TOR.

d) Discussion about proposed methodology and Activity/Staffing Schedules.

e) Quality of Consultancy Staff and their availability.

f) Facilities required for performance of the duties by the Consultants tobe provided by the client.

g) Equipment types and quantities and other material requirements.

h) The Form of Contract to be adopted for the Project.

i) Financial Terms which include verification of elements of billing rates if QBS is adopted. No negotiation in cost is carried out

j) Finalization of Minutes of Agreement/decisions and drafting of Contract Agreement.

k) Formal Award and signing of Contract Agreement.

Selection Methods Recruitment of Firms

The choice of the appropriate method of selection of consultants will depend on the nature, size, and complexity of the assignment; the likely downstream impact of the assignment; and technical and financial considerations.

i. Quality and Cost Based Selection (QCBS)

ii. Quality Based Selection (QBS)

iii. Fixed Budget Selection (FBS)

iv. Least-Cost Selection (LCS)

v. Consultants' Qualifications Selection (CQS)

vi. Single-Source Selection (SSS)/direct selection (used only in exceptional circumstances)

QCBS is a competitive process among short-listed firms that takes into account the quality of the proposal and the cost of the services in the selection of the successful firm.

QBS is appropriate for the complex or highly specialized assignments for which it is difficult to define precise TOR and the required input from the consultants, and for which the client expects the consultants to demonstrate innovation in their proposals

FBS Selection under a Fixed Budget is an appropriate method used only when the assignment is simple and can be precisely defined and when the budget is fixed.

LCS Least-Cost Selection is the only appropriate method for selecting consultants for assignments of a standard or routine nature (audits, engineering design of noncomplex works, and so forth) where well-established practices and standards exist.

CQS Selection Based on the Consultants' Qualifications is the method which may be used for small assignments for which the need for preparing and evaluating competitive proposals is not justified.

SSS Single-Source Selection may be appropriate only if it presents a clear advantage over competition: (a) for tasks that represent a continuation of previous work carried out by the firm, (b) in emergency cases, such as in response to disasters and immediately following the emergency, (c) for very small assignments, or (d) when only one firm has experience of exceptional worth for the assignment.

However, the focus of this paper is only on QCBS and QBS methods, therefore in the following section these two methods would be discussed in detail to high light merits of each.

The QCBS Selection

The Quality- and Cost-Based Selection (QCBS) is a method based on the quality of the proposals and the cost of the services offered. It is the method most frequently used to select consultants (Qiao, et al 2003), because under QCBS the cost of the proposed services is a factor of selection, this method is appropriate when;

- the type of service required is common and not too complex;
- the scope of work of the assignment can be precisely defined and the TOR are clear and well specified;
- the Client and the consultants can estimate with reasonable precision the staff time, the assignment duration, and the other inputs and costs required of the consultants;
- the risk of undesired downstream impacts is quantifiable and manageable; and
- the capacity-building program is not too ambitious and easy to estimate in duration and staff time effort.

QCBS Proposal Submission

- Two components: both submitted at the same time.

Technical Proposal	Financial Proposal (in sealed envelope)

- Technical Proposals evaluated first.
- Technical Proposal must receive 75% minimum score as per WB and ADB (PEC require 70%) from 100% maximum.
- Next, Financial Proposals of technically qualified consultants opened publicly.
- Financial Proposals evaluated.
- Then, final ranking of Proposals.

QCBS Ranking

- Technical score 80 %
- Financial score 20 %

These percentages are not fixed and can be modified as per complexity of the assignment.

- Contract negotiations held with 1st ranked firm.

Benefits of using QCBS

- No financial negotiations (negotiations are held to finalize technical issues).
- Consultants must provide quality experts at a competitive price.
- Provides for clearer transparency as financial proposals are opened publicly.

The QBS Selection

Since its introduction via the Brooks Act, QBS has been found to have resounding success in the A/E industries. Although QBS is used most often in the USA, it is also widely used in Asia, Canada, and Europe (ALII-1998) .

Public agencies have started to shift away from the traditional lowest responsive and responsible bid to other approaches in purchasing certain items and services. These alternative approaches emphasize the quality of the products and the qualifications of the vendors.

QBS is a competitive evaluation, scoring, and selection process established 42 years ago for building owners to use when hiring professional service providers. It encourages owners to solicit - and project consultants to submit - proposals for specific scopes of work that are evaluated based on qualifications first. Consultants are then shortlisted and selected for budget negotiations after preliminary selection, but before contracts are signed

QBS is appropriate when;

- Downstream impact of the assignment can be so large that the quality of the services is of overriding importance for the success of the project as a whole;
- Scope of work, the duration of the assignment, and the TOR require a degree of flexibility because of the novelty or complexity of the assignment, the need to select among innovative solutions, or the particular physical, environmental, social, or political circumstances of the project and of the Client;
- Assignment itself can be carried out in substantially different ways such that cost proposals may not be easily or necessarily comparable;
- Introduction of cost as a factor of selection makes competition unfair; or
- Need exists for an extensive and complex capacity building program.

The QBS Proposal Submission

- Two components: submitted separately

Technical Proposal (1st Submission)	Financial Proposal (2nd Submission)

- Technical Proposals evaluated and ranked (100 points max.)
- Next, first ranked firm submits a Financial Proposal
- Then, contract negotiations held with the firm

Benefits of using QBS

When scope of work is difficult to define in detail because of:

- the complexity of assignment
- the need for an innovative solution
- alternative methodologies possible, therefore difficult to compare Financial Proposals

QCBS vs QBS

Sr.#	QCBS	QBS
1.	Technical & Financial Proposals submitted	Technical Proposal only
2.	technical evaluation	technical evaluation
3.	public opening of Financial Proposals	-
4.	evaluation of Financial Proposals	-
5.	final ranking 80%technical + 20% financial	final ranking 100% technical
6.	contract negotiations	contract negotiations

Evaluation of Proposal

The formula for determining the financial scores is the following:

Sf = 100 x Fm / F, in which Sf is the financial score, Fm is the lowest price and F the price of the proposal under consideration or any other inversely proportional formula acceptable to the procuring agencies.

Sr.#	PROPOSAL	QCBS	QBS
i.	Technical	80	100
ii.	Financial	20	-
	Total	100	100

The Form of Technical and Financial Proposals under QCBS or QBS and for other selection methods are almost same.

Technical Proposal Evaluation Criteria (Percentage/Points)

Sr.#	Description	WB	ADB	PEC
I	Qualifications of firm	0-10	10-20	05-10
II	Approach & Work Methodology	20-50	20-40	10-30
III	Key Personnel	30-60	50-70	30-60
	Total	100	100	100

Technical Proposal Evaluation Sub Criteria

Sr.#	Description	WB/ADB	PEC
I	**Qualifications of firm**	**0/10-10/20**	**5-10**
	• Experience in similar projects	5-10	
	• Experience in specific projects	5-10	
II	**Approach & Methodology**	**20/20-50/40**	**10-30**
	• Understanding of the project	2-3	
	• Quality of methodology	7-12	

	• Work program	2.5-4	
	• Comments onTOR/Innovativeness	2-3.5	
	• Personnel schedule	2.5-3.5	
	• Proposal presentation	2-3.5	
	• Counterpart facilities required	2-3	
	• Association arrangement	-	

Evaluation Sub-criteria of Key Personnel

Sr.#	Description	WB	ADB	PEC
III	**Sub-criteria of key staff:**	**30-60**	**50-70**	**30-60**
	▪ Academic/general qualifications	20-30	10-20	20-30
	▪ Total experience	-	-	-
	▪ Related project experience	50-60	60-70	50-60
	▪ Specialized Training	-	-	-
	▪ Working as Team/Deputy Team Leader	-	-	-
	▪ Knowledge of language & Experience in region/overseas	10-20	10-20	0-05
	▪ Duration with firm	-	-	0-05

Total Points (I+II+III) = 100

This basic concept supported and expanded by QBS is that it incorporates multiple variables developed by the Owner in the selection of professional services, with particular importance being placed on the experience a firm has in addressing projects that have similar concerns to those identified for the current project. A single variable such as cost does not eliminate a firm from consideration in a project. This multiple variable outlook is the basis of the argument that QBS ensures a competitive process. However, absence of a fair market price without competitive bidding is one of the greatest challenges in general and specifically cited as an obstacle for QBS procurement.

QBS enable an owner to utilize identical criteria to select the most qualified architectural, engineering and contracting firms based on following (FIDIC-2011):

- Qualifications
- Professional competence
- Managerial ability
- Availability of resources
- Professional integrity

QBS may include other selection criteria such as:

- Experience and past performance of the firm

- Experience and past performance of assigned individuals
- Experience and past performance with desired delivery system
- Capacity to perform the work
- Financial strength and bonding capability
- Management plan, subcontractor relationships and technical capabilities
- Safety plan and safety record
- Quality assurance plan

A study, *conducted by* Chinowski, et al. (2009), on the use of QBS found:

- Ensures cost-effectiveness
- Lowers risk for complex projects
- Results in better projects and highly satisfied owners
- Does a better job taking into account emerging social issues
- Encourages innovation
- Does a better job protecting intellectual property
- Does a better job building capacity of staff which work for the client-owner government

According to Brooks Act (USC-1972); QBS of contractors cannot include items such as:

- Fees, price, work-hours or other cost information. These and other price-related terms are negotiated after selection.

Because absolutely no consideration of cost is allowed, including fee or general conditions, this selection method is referred to as "pure QBS" in the 2004 edition of AGC's Project Delivery Systems for Construction.

The opportunities of QBS best summarized by the American Consulting Engineers Council's adage, "When multiple prices are on the table, the owner is not in control; the price is. When price is on the table it trumps other considerations, even quality and innovation" (**1**). Pricing acts as a deterrent from choosing a contractor solely on quality and ability to innovate. QBS opportunities had to do with not including price and the potential negative impacts of including price in the selection process.

A fundamental argument supporting QBS is that when a qualified and experienced firm is selected, the design professionals will provide input to the evolution of the design solution and provide owners with options for completing the project prior to a final price being budgeted. This is opposed to the perspective that a scope must be highly defined and a set price is given based on that scope. From the study perspective, this claim is addressed by both the control of project scope, the control of design fees, and the lack of hesitation by firms to work with an incomplete scope.

The first of these issues, the control of project scope is based on the strong cost and schedule growth control results. With QBS-based projects providing lower construction cost and schedule growth being lower than the national average, the indication exists that the lack of a complete scope does not result in projects that overrun predicted costs and schedules. Rather, it is apparent that the design team works with the owner to develop a scope that ensures the project will meet the required cost and schedule criteria.

The second issue, control of design fees, relates to the concern that an incomplete scope can result in uncontrolled growth in design fees. However, the literature does not support this view. Rather, the design fee charges were a median of 10% of the final construction cost on the QBS-based projects

Finally, the lack of hesitation that the firms stated in working with owners when an incomplete scope exists for a project reinforces the point that design firms are willing to work with owners to develop a scope that meets all criteria. This view is reinforced by the statement that design firms would rather assist an owner in developing an acceptable scope than developing design solutions that must be redone in an adversarial position due to the solutions not meeting perceived scope limitations.

Findings

The Competitive bidding system and Quality-based selection system are two mainstreams of contractor selection today. However, most of the discussions relating to these two systems have concerned the project level viewpoint and little attention has been drawn to the long-range impacts of the contractor selection systems on contractors' competitive behaviour or on the whole construction industry from a holistic and system perspective. QBS creates a platform where the Client and the Consultant together, can describe the project goals, objectives and scope in pronounced detail and agree upon the Inputs & Services required to make the project a realism.

Unfortunately, Clients often deem bids necessary as bidding method gives the Client the opportunity to discover what their budget should be. However, it should not be the responsibility of consultants to invest tens of thousands of rupees in writing proposals and estimating costs for a Client who may not even be able to afford the project once they do determine the price.

While QCBS sometimes referred to as best value, it's not and it's not likely that best practices and best outcome will be achieved through an award that starts with "lowest price." A lowest-price-based process invariably results in revisions to the scope, schedule and fees to accommodate changes, omissions, new ideas, etc. during the course of design and construction. When low bid is the decision-driver, quality suffers; there are untold examples of flawed buildings designed and constructed on the basis of lowest price instead of qualifications for a specified scope of work.

Conclusion

The foundational argument that QBS provides encouragement for innovation by emphasizing a total evaluative approach over a singular emphasis on price is a difficult point to quantitatively measure.In practice, the selection of the specific procurement approach should fit the specific project characteristics, the business culture of client,

country legislation, and the market competencies. Both the QCBS and QBS approaches have been successful in delivering a variety of civil works projects across a spectrum of size and complexity. However, because of its competitive nature, QBS motivates consultants to be more creative and innovative while keeping Client's best interest in mind. QBS delivers the best value for the price by reducing construction claims and operation and maintenance costs. To get the most out of QBS, clients and consultants first need to believe in the rightness of the method, and then strive to apply it with an unbiased and thorough interpretation and implementation of the law. The common law of business balance prohibits paying a little and getting a lot - it cannot be done. Most public agencies recognize that price or cost are the poorest criterion for service selection when quality and professional creativity are sought. Few would willingly choose a surgeon or an attorney who was the "low bidder" if your life was on the line.

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