Building and Construction Authority

SEMINAR ON PRICE-QUALITY METHOD (PQM)

Seminar on the Price-Quality Method, a scheme based on both price and quality attributes to evaluate public sector construction works tenders.

Date : 13 Sep 05
Time : 2.00p.m. to 4.30p.m.
Venue : Construction Industry Training Institute (CITI)
200 Braddell Road Singapore 579700.

PROGRAMME	TIME		SPEAKER
Registration	1.30	2.00	
Opening Address	2.00	2.15	Mr Low Chin Min Director Business Development Division, BCA
Presentation on the framework of PQM	2.15	3.15	Mr Lim Jue Ming Senior Manager Ms Foo Sook Fern Senior Development Officer Procurement Policies Department, BCA
Tea-break	3.15	3.45	
Open Discussion, Q&A	3.45	4.30	

REVIEW OF CONSTRUCTION PROCUREMENT SYSTEM

PRICE-QUALITY METHOD (PQM) FOR TENDER EVALUATION



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Background

- PQM is a framework based on both price and quality attributes
  - Current evaluation guidelines considers quality attributes
  - PQM formalises the quality assessment into quantitative scores
  - Optimizes value by awarding to economically most attractive tender



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Background

- Price and quality tender evaluation models are practised in UK, Australia, Hong Kong, New Zealand, Japan, France, EU
- HK & NZ most elaborate



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Background

- Circular issued to agencies
  - To adopt PQM for evaluation of construction tenders invited under CW01 & CW02 workheads that are $3M and above
  - Safety performance is a mandatory quality criterion
  - Implementation of PQM effective from 30 Sept 05



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Principles

- PQM shall adhere to
  - Principles of transparency,
  - Value for money procurement
  - Fairness and openness
  - Comply with WTO regulations

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Principles

- Agencies to make known in the tender document :
  - weightages between price and quality attributes,
  - the quality attributes,
  - individual weightages of quality attributes, and
  - scoring method

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Principles

- Price and quality attributes will be given weightages and scored
  - Firm with best combined score awarded the project
- Tenderers can request for their rankings derived from the combined scores after tender award



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Key Features of PQM

- CRS still used as a first sieve
- Price-quality weightage ranges from 80:20 to 60:40.
- Safety performance is a mandatory attribute with at least 10% of overall quality weighting.



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Key Features of PQM

- Agencies can adopt either the one-envelope or two-envelope system
  - One-envelope system:-
    - Quality proposal and tender price are being assessed concurrently
  - Two-envelope system:-
    - Quality envelopes are opened and scores computed before the price envelopes are opened



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Key Features of PQM

- Quality attributes include
  - Past and/or ongoing project performance
    (a) Timeliness
    – completed projects w/o LD,
    – progress in ongoing projects

    (b) Quality
    – performance report of past projects
    – CONQUAS scores of completed projects
    – BCA Excellence Awards



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Key Features of PQM

- Quality attributes include (cont'd)

  ➢Past and/or ongoing project performance (cont'd)

  (c) Safety performance

  – based on MOM Demerit Points System

  – safety proposal, or safety management system

  – safety awards



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Key Features of PQM

- Quality attributes include (cont'd)

  ➢Track records

  (a) Relevant track records of specific competencies

  (b) Past project performance records

  (c) Past experience with agency



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Key Features of PQM

- Quality attributes include (cont'd)
  - Project Specific Proposal
    (a) Technical proposal
    – method of construction
    – design
    – approach
    – work programme
    – quality management system etc

    (b) Technical resources
    – firm's proposed management and technical staff
  - Others

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Guidelines on Scoring

- (a) Benchmark performance method
  - Determine benchmark performance for attribute with score set at (i) 50% to 70% or (ii) 100% of quality points

    eg Benchmark performance for safety is set at no MOM Demerit points for the past 12 months. Max score is 20 points.

    Based on (ii), firms meeting benchmark will get 20 points, while those with demerit points get lesser points or no points.

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Guidelines on Scoring

- (b) Ranking method
  - Rank bidders according to the relative merits of the proposals and allocate quality scores accordingly

    eg. Project proposals



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Guidelines on Scoring

- Minimum criterion for any single quality attribute
  - To be stipulated upfront in tender documents, if any
  - To minimize wastage in firms' tendering efforts and agencies' administrative efforts

  e.g no warning letter from MOM for past 12 months



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Guidelines on Scoring

- Setting minimum total quality score
  - Agencies may set upfront a minimum total quality score or
  - Stipulate the percentile or percentage quality score below which firms will not be considered further for price scoring
  - If two-envelope system is adopted, the price envelopes from the non-conforming tenders will not be opened



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Scoring Quality and Price

- Scoring mechanism
  - Add raw quality score of each attribute to derive total quality score (based on 100 points)
  - Raw total quality score multiplied by quality weightage to derive the total weighted quality score



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Scoring Quality and Price

- Scoring mechanism (cont'd)
  - Lowest price tender will be given max price score
  - Price scores of other bidders inversely proportional to the lowest bid price
  - Price scores of bidders multiplied by price weightage to derive weighted price score



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Scoring Quality and Price

- Scoring mechanism (cont'd)
  - Alternative bids will be treated as separate bids and assessed
  - Tenderer with highest combined price-quality score is usually awarded the project
  - Tenderers on the Price Loading List will have their prices loaded accordingly for PQM price scoring



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Scoring Quality and Price

Example: Assuming Price-Quality weighting = 70 : 30

To compute Total Weighted Quality Score

Q(total wt) = **Summation of quality score for each attribute Qx x 30%**
(based on total quality score of 100 pts)

To compute Weighted Price Score

$$\text{P(wt)} = \frac{\text{Lowest Tender Price*}}{\text{Tenderer's Price}} \times 70\%$$

To compute Overall Combined Score for tenderer

Total Score = P(wt) + Q(total wt)

*refers to conforming tenders only



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Summary of items to be made known in tender documents

- The following should be made known at tender stage:
  - Price-quality weightage
  - Quality attributes and their weightages
  - Benchmark or ranking scoring method.
  - Benchmark performance level, if adopted, to be stipulated



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Summary of items to be made known in tender documents (cont'd)

- The following should be made known at tender stage:
  - Any min qualifying criterion for a specific quality attribute
  - Any min total quality score or percentile of quality scores below which bidders will not be further considered



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Thank You



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REVIEW OF CONSTRUCTION PROCUREMENT SYSTEM

PRICE-QUALITY METHOD (PQM) FOR TENDER EVALUATION

by
Foo Sook Fern
Senior Development Officer
Business Development Division

BCA 1

Example of PQM calculation

Based on P-Q weighting = 70/30

No	Quality (non-price) Attribute	Weighting / Score	Scoring Method
1	**Project Performance**		
A	**Quality Performance (Q_a)** - Agencies have to set the Benchmark CONQUAS Score based on the prevailing FY DTS/BTS by building category - The Benchmark CONQUAS Score should not be less than the prevailing FY DTS for the particular building category Eg Benchmark CONQUAS Score is set at 80 points for 3 or more projects completed within last 3 years	80% (or 80 pts)	Benchmark performance method 100% for 3 or more projects within last 3 years with CONQUAS score 80 or above. 70% for 2 projects within last 3 years with CONQUAS score 80 or above. 35% for 1 project within last 3 years with CONQUAS score 80 or above. 0 score otherwise.

BCA 2

Example of PQM calculation (cont'd)

No	Quality (non-price) Attributes	Weighting / Score	Scoring Method
1	**Project Performance**		
B	Safety Performance (Q_b) - *No MOM Demerit Points for last 12 months*	20% (or 20 pts)	Benchmark performance method Full points if no demerit points. Deduct 10% of the full points for every demerit point.



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Example (cont'd)

(i) To compute Total Weighted Quality Score, **Q(total wt)**

Q(tot wt) = Summation of quality score for each attribute Qx * **x Quality Weighting**

(based on total quality score of 100 points)

= $(Q_a + Q_b)$ x 30%



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Example (cont'd)

(i) To compute Total Weighted Quality Score, **Q(total wt)**

Quality Performance
Number of projects within last 3 years with CONQUAS score 80 or above by tenderers are as follows:
Tenderer A = 2, Tenderer B = 3, Tenderer C = 3,
Tenderer D = 1, Tenderer E = 0, Tenderer F = 2

Safety Performance
MOM Demerit Points by tenderers are as follows:
Tenderer A = 0 pts, Tenderer B = 2 pts, Tenderer C = 8 pts,
Tenderer D = 0 pts, Tenderer E = 4 pts, Tenderer F = 6 pts

Tenderers on the Price Loading List will have their tender prices loaded.



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Example (cont'd)

(i) To compute Total Weighted Quality Score, **Q(total wt)**

Tenderers	Raw scores			Weighted scores
	Q_a	Q_b	$Q_{(tot)}$	$Q_{(total\ wt)}$
A	56	20	76	22.80
B	80	16	96	28.80
C	80	4	84	25.20
D	28	20	48	-
E	0	12	12	-
F	56	8	64	19.20



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Example (cont'd)

Agency may impose "Passing Mark" or minimum total quality score to consider only the firms with the higher quality scores eg.

Based on the total quality scores **Q(tot)**,
Passing mark for this tender is set at half of **Q(tot)** or 50 points.

Any firm scoring less than 50 points for its total quality scores, for instance, Tenderers D and E will not be considered.

(ii) To compute Weighted Price Score, **P(wt)**

$$P_{(wt)} = \frac{\text{Lowest tender price*}}{\text{Tenderer's price}} \times \text{Price Weighting}$$

= Lowest tender price* / Tenderer's price x 70%



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Example (cont'd)

(iii) To compute Overall Combined Score for Tenderer

Total Score = $P_{(wt)} + Q_{(total\ wt)}$

The tenderer with the highest combined score, in this case **Tenderer B**, is usually the awarded tenderer.

Tenderers	Bid Price (M$)	$P_{(wt)}$	$Q_{(total\ wt)}$	TOTAL SCORE
A	12.5	64.40	22.80	87.20
B	**11.9**	**67.65**	**28.80**	**96.45**
C	11.5	70.00	25.20	95.20
D	11.7	-	-	-
E	10.2	-	-	-
F	11.6	69.40	19.20	88.60



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Summary of 5 Pilot Projects using Non-Price Tender Evaluation Method

Project Particulars	Ranking Based on Price (60%)	Ranking Based on Non-Price Criteria (40%)	Overall Ranking
a) Factory Project at Changi North Contract Value: **$14,450,000/-** Awarded to Co. A	1. Co. A 2. Co. B 3. Co. C 4. Co. D 5. Co. E	1. Co. B 2. Co. A 3. Co. E 4. Co. C 5. Co. D	1. Co. A 2. Co. B 3. Co. E 4. Co. C 5. Co. D



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Summary of 5 Pilot Projects using Non-Price Tender Evaluation Method (cont'd)

Project Particulars	Ranking Based on Price (60%)	Ranking Based on Non-Price Criteria (40%)	Overall Ranking
b) Repairs & Redecoration Project at Kian Teck Contract Value: **$1,377,777/-** Awarded to Co. A	1. Co. A 2. Co. B 3. Co. C 4. Co. D 5. Co. E	1. Co. B 2. Co. A 3. Co. C 4. Co. E 5. Co. D	1. Co. A 2. Co. B 3. Co. C 4. Co. E 5. Co. D



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Summary of 5 Pilot Projects using Non-Price Tender Evaluation Method (cont'd)

Project Particulars	Ranking Based on Price (60%)	Ranking Based on Non-Price Criteria (40%)	Overall Ranking
c) Civil Engineering Project at Sungai Kadut Estate Contract Value: **$31,200,000/-** Awarded to Coy B [* Tenders submitted by Co. A & Co. D did not comply with the Tender Requirements]	1. Co. A* 2. Co. B 3. Co. C 4. Co. D* 5. Co. E	1. Co. B 2. Co. C 3. Co. E	1. Co. B 2. Co. C 3. Co. E

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Summary of 5 Pilot Projects using Non-Price Tender Evaluation Method (cont'd)

Project Particulars	Ranking Based on Price (60%)	Ranking Based on Non-Price Criteria (40%)	Overall Ranking
d) Repairs & Redecoration Project at Jalan Bukit Merah Contract Value: **$933,225/-** Awarded to Co. B	1. Co. A 2. Co. B 3. Co. C 4. Co. D 5. Co. E	1. Co. B 2. Co. E 3. Co. A 4. Co. C 5. Co. D	1. Co. B 2. Co. A 3. Co. E 4. Co. C 5. Co. D

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Summary of 5 Pilot Projects using Non-Price Tender Evaluation Method (cont'd)

Project Particulars	Ranking Based on Price (60%)	Ranking Based on Non-Price Criteria (40%)	Overall Ranking
e) Building Project at one-North Contract Value: **$299,800,000/-** Awarded to Co. A	1. Co. A 2. Co. B 3. Co. C 4. Co. D 5. Co. E	1. Co. A 2. Co. B 3. Co. C 4. Co. D 5. Co. E	1. Co. A 2. Co. B 3. Co. C 4. Co. D 5. Co. E



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Thank You



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