Chapter 5

Findings & Suggestive Solution

1 Findings

Figure -9 illustrates the two component QC (Quality & Cost) model, where the selection and evaluation of the consultant is based on only two parameters i.e. Cost and Quality. In this model client PSU and consultant have their own obligations and benefits, in such a fashion that the obligation of one’s becomes the benefit of other.

Obligation of the consultant which is quality becomes the benefit of the client PSU and obligation of the client PSU i.e. cost becomes the benefit to the consultant. This can be illustrating in Figure – 4.2.

So by looking at Figure- 4.2, we also see that, both consultant and client PSU perform only to fulfill their obligations, and advertently look for their benefits. In this scenario it is also being observed that there is neither the joint obligation for cost and quality nor mutual benefit from the same in the project.

In the present Cost and Quality model, client PSU who is hiring the services of a consultant can only put these Q and C parameters which serve the purpose for the selection and evaluation. This present model usually creates the tussle between client PSU and consultants for stretching and shrinking of Q and C until the project ends.

A new parameter in the QC model has been found which is called Project Management which is needed to be included in the evaluation and selection method.
5.1.1 Process & Enablers of Project Management Identified

A project is an effort undertaken to create a unique product or service. The temporary nature of products indicates a definite beginning and end. The end is reached when the project’s objectives have been met or the project is terminated because of not meeting the objectives as required.

Project management is the art of organizing the components of a project, whether the project is developing a new product or launching of a new service or marketing of the product. Project management is the discipline of planning, organizing, motivating and controlling resources to achieve specific goals. The primary challenge of project management is to achieve the project goals. Project management is the application of knowledge, skills, tools and techniques to project activities to meet the project requirements. Project management is accomplished through the appropriate application and integration of the project management process comprising the five process groups identified as follows.

1. **Initiation of Project**

In this stage the Project Manager defines what the project is all about and what the users hope to achieve by undertaking the project. This phase also includes a list of project deliverables, the outcome of a specific set of activities. The Project Manager works with the business sponsor or manager who wants to have the project implemented and other stakeholders those who have an interest in the outcome of the project.

2. **Planning of Project**

First of all define the project activities. In this stage the Project Manager lists all activities or tasks, how the tasks are related, how long each task will take, and how each tasks is tied to a specific deadline. This phase also allows the Project Manager to define relationships between tasks. For example, if one
task is x number of days late the project tasks related to it will also reflect a comparable delay.

Likewise the Project Manager can set milestones, dates by which important aspects of the project can be met. Define requirements for completing the project. In this stage, the Project Manager identifies how many people (often referred to as “resources”) and how much expense (“cost”) is involved in the project, as well as any other requirements that are necessary for completing the project.

The project manager will also need to manage assumptions and risks related to the project. The project manager will also want to identify project constraints. Constraints typically relate to schedule, resources, budget and scope.

A change in one constraint will typically affect the other constraints. For example, a budget constraint may affect the number of people who can work on the project, thereby imposing a resource constraint. Likewise, if additional features are added as part of project scope, that could affect scheduling, resources, and budget.

3. Execution of Project

Here the project team is being created. In this phase, the Project Manager knows how much resources and budget he or she has that can be used for the project. The Project Manager then assigns those resources and allocates budget to various tasks in the project. Then the project work begins.

4. Monitoring and Controlling of Project

The Project Manager is in charge of updating the project plans to reflect actual time passed for each task. By keeping up with the details of progress, the Project Manager is able understand how well the project is progressing overall.
5. Closing of Project

In this stage, the Project Manager and business owner pull together the project team and those who have an interest in the outcome of the project (stakeholders) to analyze the final outcome of the project as follows:

1. Identify requirements.

2. Addressing the various needs, concerns and expectations of the stakeholders as the project is planned and carried out.

3. Balancing the competing project constraints including, but not limited to:
   1. Scope
   2. Quality
   3. Schedule
   4. Budget
   5. Resources
   6. Risk

The specific project will influence the constraints on which the Project Manager needs to focus. These factors are related with each other in such a way that if one of these factors changes at least one or more of the factors will get affected. For example, if the schedule of work is to be lessened, often the budget needs to be increased so as to add additional resources to complete the same amount of work in less time. If increase in budget is not possible, then scope or quality of the product may be reduced to deliver the product on time.

Also there is a risk in changing the requirements of the project. The project team must be able to assess the situation and balance the demands in order to deliver a successful project. Project management is to achieve the project
goals. Project management is the application of knowledge, skills, tools and techniques to project activities to meet the project requirements.

4. A Project Management Office may be delegated the authority to act as an integral stakeholder and a key decision maker during the beginning of each project, to make recommendations or to terminate projects or take other actions as required to keep business objectives consistent.

In addition, the PMO may be involved in the selection, management and deployment of shared or dedicated project resources.

The primary function of PMO is to support managers in a variety of ways which may include, but are not limited to:

1. Managing shared resources across all projects administered by the PMO.

2. Identifying and developing project management methodology, best practices and standards.

3. Coaching, mentoring, training and oversight.

4. Monitoring compliance with project management standards, policies, procedures and templates via projects audits.

5. Developing and managing projects policies, procedure, templates and other shared documentation.

6. Coordinating communication across projects.

2 Suggestive Solutions

An effective suggestive solution is a mathematical model called PROQCI (Project management, Oriented Quality and Cost Integration) model uses a new parameter called Project Management which integrates the Quality and
Cost together with it, to enable the client PSU and consultant to have the joint obligation and benefits.

Figure – 5.1 illustrates the PROQCI model. The PROQCI model is powerful and flexible method which enables the PSU client and consultant to jointly work in a team, instead of work advertently.

This model will make the both PSU client and consultant to go for obligation and benefit together; instead of being remain into their benefit-obligation domain. The combined benefit-obligation domain can be expressed as

Obligation \([\text{Cost} \& \text{Quality}] + \text{[Project Management]} + \text{Mutually Benefit} \ [\text{Cost} \& \text{Quality}]\)

Now, we will convert this combined benefit-obligation domain with a mathematical model described as follows

Let the weighted value of the Quality, Project Management and Cost be Q, P and C ; then suggestive effective and mathematical model for PROQCI (Project management, Oriented Quality and Cost Integration) method is given in figure – 5.1

| Quality Q | Project Management P | Cost C |

Figure – 5.1

And based on enablers and processes identified for the project management, the values of P may be as follows:

1. Expertise of the consultant in the field of Project Management.
2. Adhering to methodologies and ethical codes of Project Management.
3. Project Management qualified staff.

4. Project Management Computer (PMC) to run the Project Management Software.

5. Number of years of Experience working with Project Management methodologies.

For the evaluation E, relationship can be expressed as:

\[ x*Q + z*P + y*C = E \]  \hspace{1cm} \text{(iii)}

Where E is final evaluated value and x, z and y are percentage weight age provided to Q, P and C respectively by the Client PSU at the time of evaluation and can be expressed as

\[ x + y + z = 100 \]  \hspace{1cm} \text{(iv)}

The client PSU may fix the values of x, z & y as 50:40:10, 40:40:20 or any other value depends upon the need and complexity of the project.

The percentage to the weighted value of P should be fixed in such a way that it becomes the important parameter in the selection and evaluation method.

The x percentage indicates at what level client PSU looking for Quality and y is the percentage indicates at what level PSU cost consideration while the z percentage will indicated at what extent the client PSU is look for the joint responsibility or obligations with mutual benefit.
Take an example here as follows

Suppose there are four bidders namely A, B, C & D and as per PROQCI method and the weightage for the quality (or technical), cost (or financial) and project management is 50:20:30 then assumed that the technical evaluation TER based on total of 100 marks and to qualify in technical evaluation minimum 70 marks need to be score (or required to open bidder’s financial bid)

Bidder A scored 68
Bidder B scored 75
Bidder C scored 77
Bidder D scored 70

Here bidder A’s bid is rejected as he is unable to qualify in the technical evaluation while bidder B, C and D’s bid is accepted as they are qualify in the technical evaluation by scoring equal to or more than 70 marks.

The project management evaluation PME is based on total of 100 marks

Bidder B scored 60
Bidder C scored 80
Bidder D scored 90

Now bidders B, C and D’s bid will get open and let assume that

Bidder B’s price is 75 crore
Bidder C’s price is 68 crore
Bidder D’s price is 62 crore
Converting these prices on H1 (Highest one) for getting financial score by dividing the lowest bidder price by the price of respective bidder pricing. So here we have to divide the bidder D’s price by B, C and D’s price to get individual score of bidder B, C and D. So H1 score for the bidders are as follows

Bidder B scored \( \frac{62}{75} \times 100 = 82 \)
Bidder C scored \( \frac{62}{68} \times 100 = 91 \)
Bidder D scored \( \frac{62}{62} \times 100 = 100 \)

Now we have all technical, project management as well as financial score of the bidders B, C and D.

In the final calculation it is being now to calculate the net score which is as follows.

Remember the weightage for the quality (or technical), project management and cost (or financial) is 50:20:30

Bidder B’s score is \( 75 \times 0.5 + 60 \times 0.2 + 82 \times 0.3 = 74.1 \)
Bidder C’s score is \( 77 \times 0.5 + 80 \times 0.2 + 91 \times 0.3 = 81.8 \)
Bidder D’s score is \( 70 \times 0.5 + 90 \times 0.2 + 100 \times 0.3 = 83 \)
Bidder D’s score is highest one i.e. 83 compare to 74.1 of bidder B and 81.8 of bidder C and hence the contract will be awarded to bidder D.

Here it is also to be here note that bidder B scored high in TER but D score the highest marks combined from the technical bid evaluation for the quality, PME for the project management and financial bid evaluation for the cost.
3 Advantages of the Suggestive Solution

PROQCI method indicates a team consists of client PSU and consultant doing the job for achieving the excellence, rather than consultant performing for the client PSU for a contract and would get paid for it.

This selection and evaluation method also helps to the client PSU and consultant for establishing the realistic and achievable targets in the projects. This will not only help in timely payment to the consultant but also in contract closure.

This selection and evaluation method creates two interfaces for each side (PSU client and Consultant) for jointly execution of the project for joint obligation, better communication and mutual benefits. Refer Figure - 5.2.

![Figure - 5.2](image)

The equation (iii) illustrates that evaluation E will be empowering both the client PSU and customer to have the flexible and more realistic mechanism to handle the issues.

The equation (iv) also illustrates that evaluation E will be empowering the client PSUs of least developing countries and developing countries to overcome the hurdle of delaying projects due to reasons explained.
This selection and evaluation method also helps merging of two professions i.e. consulting and project management in such a way that consultant works with their client PSUs in good relation and harmony and would reap the following benefits:

1. **Jointly Set the PMC**

The PSU customer along with its consultant jointly set the Project Management Server (PMC) as per the agreed terms of the PO (Purchase order) and agreement signed.

The schedule, resources and milestone etc. must be fitted in the PMC software by the EIC (Engineer in Charge) deputed by the PSU customer and the Project Manager deputed by the consultant.

It is also suggested that any edit in the parameters related to schedule, resources and milestone etc. must be password protected and that particular password must be constructed by addition of Alphabets/Number/Special characters put in by PSU customer (these characters must not be share with the consultant) and Alphabets/Number/Special characters put in by consultant (these characters must not be share with the PSU consultant).

By jointly set the PMC means that the things are agreed and any change require in the scope of work or payment plan etc will be feed by both the PSU customer and consultant.

2. **Avoiding Payment Problem**

Payments issues arise between client PSU and consultant due to disputes as PSU client insist for change in scope of work. This may lead to affect the services offered by the consultant. Consultant thinks he has performed as per satisfaction of the client PSU and has the right to get the payment, but the client PSU thinks otherwise.
By using PROQCI method and jointly set the PMC means that the things are agreed and any change require in the scope of work or payment plan etc will be feed by both the PSU customer and consultant, hence there is no change in the scope of work until unless agreed by both the parties.

3. Avoiding Communication Problem

Most of the times consultants do face problems in identifying the real client PSU, as regard to their consulting activities. When multiple owners exist from the client PSU’s side, it creates multiple faces of the client PSU confusing the consultant, as to whom amongst the multiple owners has obligation for the payment and authority on requesting the consultant for the change in scope of work, and signing off.

In some situation even the real customer or EIC (Engineer in Charge), who is the decision making authority for project execution, planning and payment unable to take the decision and wants more time and lot of documentation before it. By using PROQCI method communication problem get resolved as PMC server clearly provides the depth of the agreed scope of work and schedule.

4. Avoiding Dissatisfaction of the PSU client

Dissatisfaction express by the client PSU in terms of quality set, may create the dispute between him and consultant. Quality is the centre entity around which client PSU and consultant activities rotate around and any deficiency related to the quality may leads to contract closure and payment problems.

Unsatisfactory Quality due to dissatisfaction expressed by the PSU customer may delay in contract closure and finally sign off. This leads to delay in related output to realize into the market.
PROQCI method acts as a catalyst for the scope of work and quality mentioned in the contract. PROQCI method also provide the channel in PMC for not to deviate the scope of work.

5. Avoiding Rising of Project cost

If both PSU client and consultant can change quality, scope of work, schedule and resources, then one can observe rise in the cost of project.

Once PMC has been set in a PROQCI method, both PSU client and consultant can change quality, scope of work, schedule and resources jointly and with planning and hence no rise of cost in the project.

6. Avoiding Cost of Change

Any change in quality, scope of work, schedule and resources come with a cost and further increase the cost of the project. PROQCI method helps to avoid change in quality, scope of work, schedule and resources.

7. Enhance the Productivity of Project

Once quality, scope of work, schedule and resources are as per plan and jointly set in the PMC means that the things are agreed and any change require in the scope of work schedule and resources or payment plan etc will be feed by both the PSU customer and consultant and hence no conflict. So PROQCI method enhances and increases the productivity of the project.

8. Assurance of timeliness completion of the project

Once quality, scope of work, schedule and resources are as per plan and jointly set in the PMC means that the things are agreed and any change require in the scope of work or schedule etc will be feed by both the PSU customer and consultant and hence enable timeliness completion of the project.
9. **PMC will become the contractual reference document to for the progress and quality of the work and schedule**

The PSU customer along with its consultant jointly set the Project Management Server (PMC) as per the agreed terms of the PO (Purchase order) and agreement signed.

The schedule, resources and milestone etc. must be fitted in the PMC software by the EIC (Engineer in Charge) deputed by the PSU customer and the Project Manager deputed by the consultant.

PMC will become the contractual reference document to for the progress and quality of the work and schedule.

10. **PMC will become the contractual reference document for Payment.**

Payments issues arise between client PSU and consultant due to disputes. This may lead to affect the services offered by the consultant. Consultant thinks he has performed as per satisfaction of the client PSU and has the right to get the payment, but the client PSU thinks otherwise.

The schedule, resources and milestone etc. must be fitted in the PMC software by the EIC (Engineer in Charge) deputed by the PSU customer and the Project Manager deputed by the consultant.

PMC will become the contractual reference document to for the progress and quality of the work and schedule. The payment based on milestone and agreeable output is available in the PMC server.

11. **Transparency in the Project**

The schedule, resources, milestone and payment plan etc. must be fitted in the PMC software by the EIC (Engineer in Charge) deputed by the PSU customer and the Project Manager deputed by the consultant.
Everything is available in the PMC server and is totally transparent. Either PSU client or consultant can access the server to see the quality cost domain as per their requirement.

12. Better CRM (Customer Relationship Management)

Once quality, scope of work, schedule and resources are as per plan and jointly set in the PMC means that the things are agreed and any change require in the scope of work schedule and resources or payment plan etc will be feed by both the PSU customer and consultant and hence no conflict. So PROQCI method not only enhances and increases the productivity of the project but also provide the better CRM compare to CRM without PROQCI method.