

Reducing Contract Risks through the Right Contracting Strategy

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Abstract

Construction contract is one of the most important factors that affect the project success. Construction industry has different characteristics that may lead to claims and disputes between the different parties. The flexibility of owner to make changes during the execution phase, the distribution of risks between owner and contractor and the degree of owner involvement in the project control during construction time may vary from a contracting strategy to another. Typical contracting strategies include cost reimbursement, fixed price or lump sum, continuing services agreement, program management, and long-term partnering agreement. This paper will spot the lights on the details of various contracting arrangements; most commonly used contract clauses, advantages and disadvantages of each strategy, obligations of each party, the distribution of risks between parties, and the appropriate dispute resolution technique for each strategy in the construction industry in Egypt. A questionnaire survey was conducted to a sample representing different parties of construction industry. The first part of the questionnaire addresses factors affecting the choice of contracting strategy, which include: project level of scope definition, the flexibility of owner to make changes during the execution phase, the project cost and schedule considerations, the risk allocation between owner and contractor, and the possibility of applying Alternative Dispute Resolutions (ADR) techniques to resolve disputes. While the second part suggesting the appropriate contracting strategy for each construction party and the right ADR technique to be used in case of disputes arising from the application of the selected strategy.

1. Introduction

Construction industry has different characteristics that may lead to claims and disputes between the different parties. The flexibility of owner to make changes during the execution phase, the distribution of risks between owner and contractor and the degree of owner involvement in the project control during construction time may vary from a contracting strategy to another. Construction clients had realized through the last decades that the lowest

price bid is not always the best. Evaluation of contractors based on multi-criteria basis is, therefore, becoming more important to the construction industry. In most countries, contract strategy selection is done upon regulating laws that take into consideration different circumstances involved in the industry. In Egypt, for example, tender law is evaluating contractors according to both technical and financial basis, but no specific technical criteria were determined in each type of construction industry (El Agroudy et al. 2008). Procurement strategies include: Traditional Procurement Options - Fixed Price Contracting, Total Package Options - BOO, BOT, BOOT, Design and Construct, Novation and Turnkey, Construction Management (CM) and Project Management (PM) and PM/CM, Sequential Negotiated Work Packages - On-Call Contracting, Guaranteed Maximum Price (GMP) and Full Cost Reimbursable Procurement. This paper aims to offer a path for future procurement decision-makers to achieve a satisfactory result that meets the needs of a wider range of project stakeholders that was considered valid for much of the 20th century.

2. Challenges Facing Procurement Decisions

More challenges are facing procurement decision-makers while selecting the appropriate strategy. For a long time, cheapest price was the only criterion in the selection process which leads, in the end, to many problems as we should consider the best value compared to the initial price. The second challenge was always how to reach a win-win contract as, in many cases, win-lose situation will lead to a disaster. Other challenges are coming mainly from the stakeholders' attitude for a short-term profit gain or capital cost-reduction focusing which, in turn, will have a detrimental quality-of-life impact through an unhealthy profit maximization or initial cost reduction. Moreover, project participants non-organizes interference with undefined or missing definition of stakeholders scope add more challenges to be considered while selecting the contract strategy. Derek Walker et al. (2003) had six real challenges facing procurement decision-makers (Table.1).

Table 1: Six 'Real' Challenges Facing Facility Procurement Decision-Makers

Challenges	Solutions
1. The 'cheapest' initial capital price is seldom the most economic long-term solution	1. Procure projects on the basis of 'best value' not 'cheapest initial price'
2. Negative conflict-ridden approaches result in a litigious atmosphere in which win-lose mentality prevails locking out many creative solutions and win-win possibilities.	2. Use an agreed problem solving approach and dispute resolution mechanism that recognizes the validity of diversity of opinion and approaches providing a greater pool of solution possibilities.
3. Stakeholder-value generating possibilities are seldom revealed through a short-term profit gain or capital cost-reduction focus. This approach constrains solutions to a win-lose outcome and is not conducive to encouraging win-win outcomes.	3. Focus on satisfying the real needs of stakeholders A focus on developing and maintaining long term relationships often releases creative energies and synergies that reduces wasted energy and increases wider knowledge and experience for all project parties involved.

4. Project participants and their supporting communities often experience detrimental quality-of-life impact through an unhealthy focus on profit maximization or initial cost reduction. Often supporting communities pay a high indirect cost for projects.	4. Business needs to recognize that its raison d'être is to increase community value rather than simply maximize its own wealth. Businesses survive and are sustained by supporting communities, which generates market demand and creates prosperity.
5. The environment is often degraded when the cheapest initial cost and bottom-line profits are relentlessly pursued. The consequences of waste generation are often borne by the community rather than those who have generated it.	5. The TQM approach in its fullest sense should be adopted. Each project must not degrade the external environment or the supporting social system for which the project is intended to serve.
6. Project stakeholders include a diverse group of individuals including project team participants and others who will be ultimately affected by the project.	6. Recognize that performance criteria extend beyond low initial cost or profit margins. A more balanced scorecard of project success should prevail that satisfies a wider scope of project stakeholder.

Individual organizations should recognize that while they may operate inside a formal alliance, they are subject to judgment of their actions by a wide community of interests. Project alliances need to appreciate the broad range of community values and address them to truly achieve long term success by creating sustainable projects. The judgment of corporate or project success is increasingly being seen as a function of financial, environmental and social performance. This triple bottom line is an emerging issue highlighted as one of the 21st century's pressing challenges.

3. Contract Conflicts

Conflicts may arise during selection, during contracting, during construction, and afterwards. In order to prevent deadlock and delay, a swift and harmonious conflict-resolution process is an essential ingredient of the alliance contract. However, a certain level of conflict may have positive effects. It may stimulate information processing. Suppressing conflicts may have negative effects on the quality of decision-making. According to negotiation theorists, cooperative behavior towards conflict should be stimulated. Parties with a cooperative attitude are likely to engage in constructive conflict resolution processes. The more open information exchange is, the more constructive negotiation will take place and the more often the parties will arrive at mutually profitable agreement. The escalation of conflicts and discussing them take time and money and are harmful to the parties' trust in each other. If a conflict escalates, it is no longer constructive, so contending, as a conflict-management style, should not be stimulated. Adapting and avoiding may result in loss of innovation potential and criticism. Compromising is more constructive, but problem solving – searching for integrative, win-win solutions – in issues that matter is the best way to keep cooperation going and reach win-win outcomes. The way in which a conflict is perceived affects expectations, communication, problem-solving methods, productivity, etc. Defining conflicts as common problems is constructive in this light. Agreeing on sharing risks can do this, as risks are an important source of conflict. Conflict resolution procedures in the construction industry usually mean either legal proceedings or arbitration. These are competitive problem-solving approaches, not cooperative ones. In purely technical discussions or when minor issues are at hand, a legally binding advice may be helpful. However,

when issues arise in which the parties' interests differ greatly, cooperative conflict approaches are more productive and fit best into the alliancing concept. The challenge is to "fit the right resolution process to the conflict."

4. Procurement Strategies

The distribution of risk between Owner and Contractor varies according to the procurement strategy used. Figure .1 illustrate this distribution in the following procurement strategies:

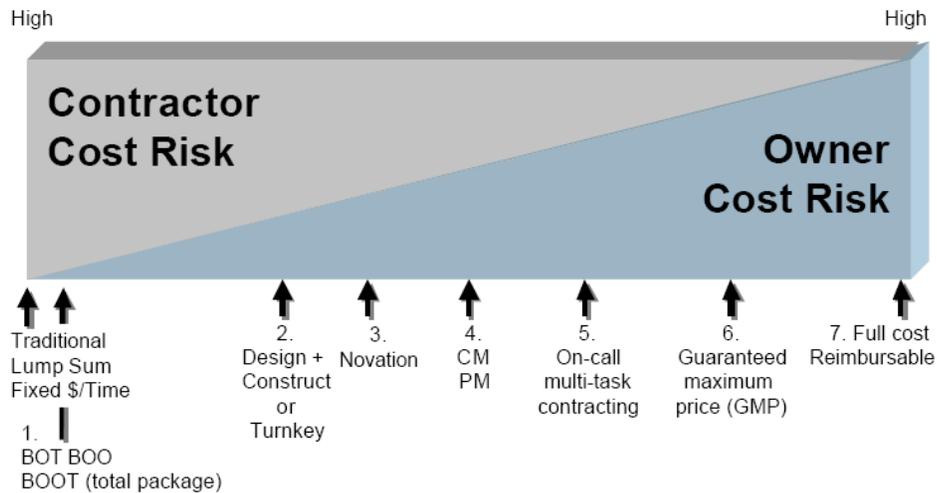


Fig.1: Risk Cost Allocation for different Delivery Systems

4.1. Traditional Procurement Options - Fixed Price Contracting

The *traditional*, or conventional, approach to procuring projects involves discrete design development, tender and contract award and construction delivery phases. Each phase is, in theory, separate and distinct. The process begins with a client approaching the principal design consultant. This is generally the architect for building projects or a design engineer for engineering projects. The design is developed to as close to 100% complete as possible before tenders are invited. In practice there are many design issues left incomplete and unresolved so there is often refinement and amendment of design details during the project delivery phase. Tenders are invited on one of two bases. Open tendering allows anyone to tender for the project. Closed or pre-qualified tendering restricts those invited who have met pre-tender qualification criteria such as demonstrated financial soundness and relevant project experience.

4.2. Total Package Options - BOO, BOT, BOOT

Another option that occupies the fixed-cost end of the project procurement risk spectrum is the *total package* option. In this procurement option a client's project need is met by an entity that contracts to design, build, operate, own for some period of time and transfer the facility back to the owner. In the *BOO, BOT, BOOT* the 'B' represents the word 'build', the first 'O' as 'operate' and the second 'O' as 'own' and the 'T' as 'transfer'. With the BOT 'family' of

procurement options an alliance or joint venture group forms to provide a facility for a client for which the client makes a concession agreement to fund the facility until that facility's ownership is transferred to the client. This arrangement is more common for infrastructure projects than buildings because the concession allows for tolls or other payments to be made by end-users to cover the cost of both procuring the facility and its operation.

4.3. Design and Construct, Novation and Turnkey

A *design and construct (D+C)* procurement approach provides for an organization to be contracted by a client to manage the design and construction processes with a single point of contact. There may have been preliminary sketch plans developed to indicate a generalized design solution or the design brief may be left fairly open for the D+C contractor to offer proposals. In *combined project management and construction management (PM/CM)* procurement options, an organization undertakes to represent the client in leading the design team, and undertakes the management of the construction process including providing construction advice during design development. The PM/CM entity may act as advisor (in which case the managerial links are persuasive rather than directive) or may undertake the work under a contractual arrangement in which it carries financial risk. In a D+C arrangement, this team will hire both design team members and construction management team members either within the design and construction company entity or as sub-contractors. The design team may be sourced from in-house staff or, as is more frequently the case, sourced from the general pool of design consultants undertaking a variety of procurement forms.

4.4. Construction Management (CM) and Project Management (PM) and PM/CM

Non-traditional procurement methods allow for early contractor involvement in the design development process. This has the benefit of allowing contractor expertise to be made readily available to the design team. This build ability or constructability advice is crucial to the development of design solutions that maintain value in terms of the quality of product as well as providing elegant solutions to production problems. One non-traditional procurement method proved popular over the past two decades is *Construction Management (CM)*. Under the CM method the contractor acts as consultant builder providing significant advice on the practicality of the design and expected construction methods to be employed. The CM will also provide services such as construction planning, cost control and coordination and supervision of those who have direct contacts with the owner to carry out operational work.

4.5. Sequential Negotiated Work Packages - On-Call Contracting

The idea of agreeing general principles, terms and conditions of reward systems for contacted services then refining agreements for specific work tasks is not new. In a sense this is very much like the arrangements that prevail with much of maintenance contracting where skilled workers are contracted for on-call services. Similarly, medical practitioners have been reported to contract their services on an on-call basis.

On-call contracting is a procurement strategy where the owner initially signs a master contract with one consultant for a project then divides the project work into task orders (TOs) that are released to the consultant in phases. It is based on the premise that the owner or client representative knows the nature of the work better than the consultant does at the start of a project but the consultant knows more at the execution stage and should assume more cost risk at that time. It is different from the cost plus (reimbursable) or guaranteed maximum price (GMP) concept. The advantages are said to include the capacity within an uncertain project

environment to freeze design of work packages into discrete TOs. Table 2 illustrates some on-call operating characteristics.

Table 2: Typical On-Call Contracting Characteristics of Design Projects
(Shing-Tao & Ibbs 1998)

Characteristic	Master Contract	Task Order (TO)
Planning mode	Pre-project planning	TO planning
Requirements covered	General requirements	Specific requirements
Contract analogy	Single prime contract	Multiple contracts
Payment method	Reimbursable	Fixed Price (recommended)
Cost risk	Risk mainly with the owner	Risk mainly with the consultant

4.6. Guaranteed Maximum Price (GMP)

In the *GMP* arrangement, the client accepts a share of the cost risk. The client will agree to reimburse the consultant or contractor only up to a negotiated guaranteed maximum amount. After that, the consultant or contractor bears the risk. This method provides the knowledge and expertise of the client to influence the budget making process to provide a reimbursable amount for the work but potential mismanagement on the part of the contractor is guarded against through a guaranteed maximum limit. The contractor either accepts any expenditure over that amount or another suitable arrangement is negotiated. The *GMP* arrangement seems to be gaining popularity in the USA when used in conjunction with a *D+C* approach. The arrangement is described as follows:

"On a *GMP* project, the contractor bases his bid on partially-completed documents and, extrapolating from them, warrants to the Owner that the price will not exceed a certain sum. The work is then paid for at the contractor's actual cost plus a fee, until the *GMP* is reached. After that, the contractor absorbs additional costs. If the actual cost is less than the *GMP* the Owner keeps the savings (or sometimes a portion of them with the contractor as an incentive)".

4.7. Full Cost Reimbursable Procurement

There are occasions when a client wants or needs to maintain total control over the design result and the construction process. This may be for security reasons, because the design solution is highly complex (thus contractor risk is prohibitive), or because of the client's rapidly changing requirements. In such cases, one option available to the client is to provide an in-house *D+C* facility but this may not be feasible. It takes more than capital to establish a contracting and/or design organization it requires high levels of expertise and organizational knowledge.

Thus, a client can in effect 'rent' such skills and capacity through contracting to pay a firm all the costs of production plus an agreed fee for providing the expertise to advise on production techniques and coordinate implementation—on a *full cost recovery basis*. This option provides for a contractor to be chosen to undertake the work on a cost reimbursable basis with an agreed allowance for profit and overhead. The project cost, scope and other performance aspects can be shaped during the design and development phase. This option is suitable to highly uncertain or risky projects where design details are unknown at the time of tender, other aspects of the external environment are subject to great change, or the client prefers to maintain the right to be able to discharge the contractor during the construction phase.

5. Questionnaire Design and Analysis

A questionnaire survey was conducted on a sample of construction industry parties (Owners, Consultants, and Contractors) in Egypt. Sixty questionnaires were distributed to the target sample to collect their opinion about factors affecting the choice of contracting strategy and the contracting strategy that suits different types of projects. Consisting of two main parts: the first part measures the importance of each factor affecting procurement strategy selection including: project level of scope definition, the flexibility of owner to make changes during the execution phase, the project cost and schedule considerations, the risk allocation between owner and contractor, and the possibility of applying Alternative Dispute Resolutions (ADR) techniques to resolve disputes. While the second part suggests the appropriate procurement strategy for different types of projects. The questionnaire was designed on a numerical scale; an expert was asked to give a percentage between 0 and 100 to reflect his/her opinion in the degree of importance for each factor. In this study, forty eight questionnaires were collected out of the sixty. The data are gathered and then analyzed to assign the resultant degree for each factor based on the summed opinion of all experts. Table 3 presents the percentage of importance of each of the five selection criteria.

Table 3: Importance Degree of Selection Criteria

Selection Criteria	% of Importance
Project level of scope definition	73 %
Flexibility of owner to make changes during the execution phase	71 %
Project cost and schedule considerations	85 %
Risk allocation between owner and contractor	91 %
Possibility of applying (ADR) techniques to resolve disputes	69 %

It was noticed that the risk allocation between owner and contractor has got the highest score among the five selection criteria. As risk represents a major factor of project success if managed properly, it is very important to distribute the risk in a right way. Following was the project cost and schedule considerations as they are of vital importance to any project. Then the project level of scope definition, then the flexibility of owner to make changes during the execution phase. Finally, came the possibility of applying (ADR) techniques to resolve disputes.

Second part of questionnaire measured the preference of procurement strategy from the point of view of different construction parties (Owner, Consultant and Contractor). For the Owner, fixed price contracts are the most preferable and full reimbursement contracts are the lowest referable (Fig.2). For the consultant, CM/PM is the most preferable and on-call procurement is the lowest

preferable (Fig. 3). For the contractor, full reimbursement is the most preferable while CM/PM is the lowest preferable (Fig. 4).

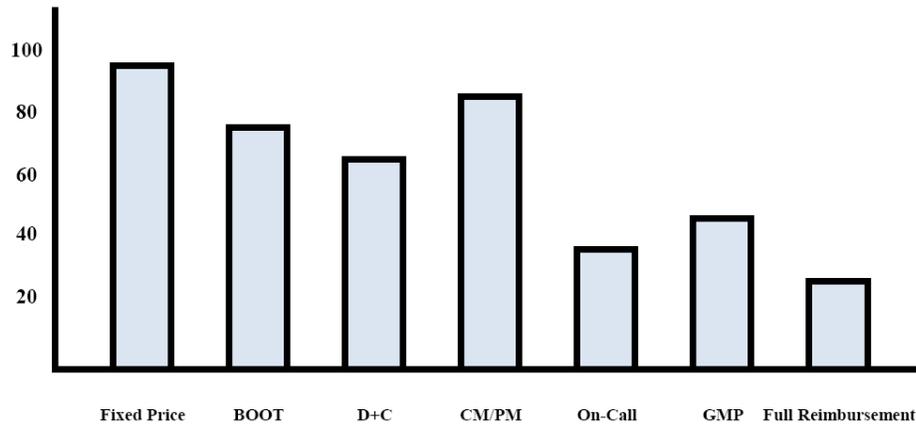


Fig. 2: Owner Procurement Preference

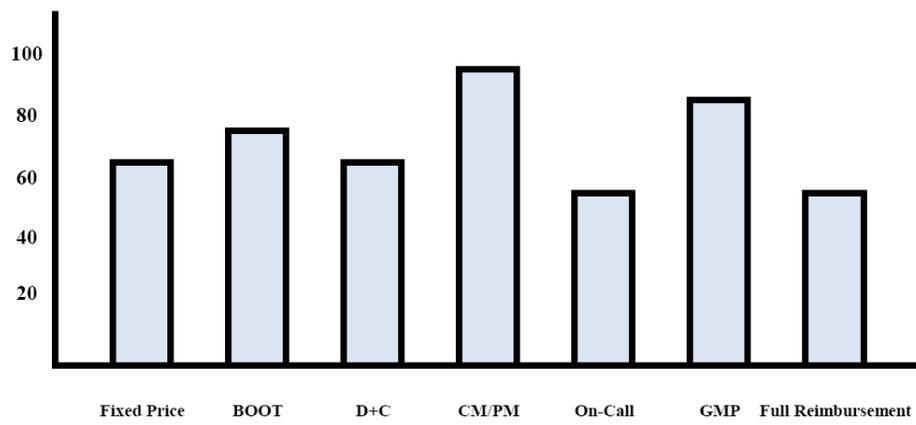


Fig. 3: Consultant Procurement Preference

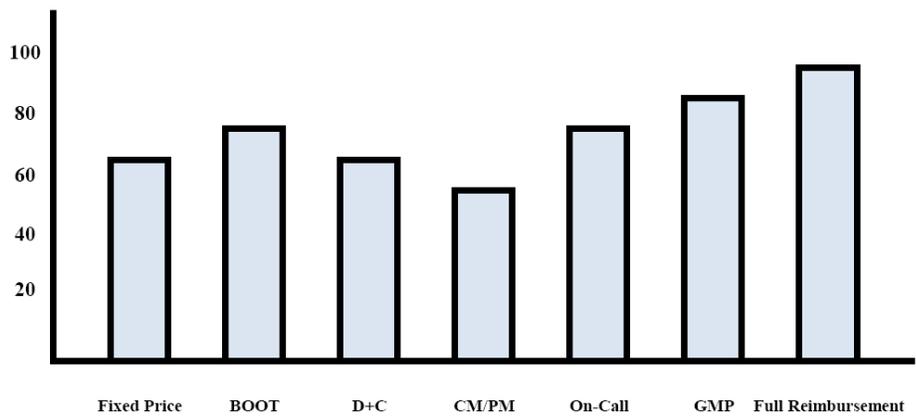


Fig. 4: Contractor Procurement Preference

6. Conclusion

To identify factors affecting selection of procurement strategy and the appropriate strategy for each party, a questionnaire survey was conducted to a sample representing different construction parties. Consisting of two main parts, the questionnaire first part result in five selection criteria: Project level of scope definition, Flexibility of owner to make changes during the execution phase, Project cost and schedule considerations, Risk allocation between owner and contractor and Possibility of applying (ADR) techniques to resolve disputes. Second part of questionnaire addresses the appropriate contracting strategy for each party: For the Owner, fixed price contracts are the most preferable as minimizing risk and full reimbursement contracts are the lowest referable as maximizing risk. For the consultant, CM/PM is the most preferable and on-call procurement is the lowest preferable. For the contractor, full reimbursement is the most preferable as minimizing risk while CM/PM is the lowest preferable.

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