

Contract strategy and the contractor selection process construction essay



Contracts are the fundament of the project management. They are used to procure people, materials and services. Main components in the contractor selection process will be outlined in this chapter. This processes are influenced by many factors such as the nature of the parties included, project type, and the risk allocation between the parties.

The project is always about achieving a result. The main problem of this that client usually can not or doesn't wish to provide all necessary resources to complete the project from the internal sources. Therefore there is a need of obtaining resources from external organizations in order to achieve planned results. The method chosen by the client plays the crucial point. Proper understanding of contract conditions and the way of administering them is therefore fundamental to the project manager.

Different industries use different types of contract in order to achieve desired results. Therefore, standard types of work-based contracts used in construction industry are completely different to the result-based contracts used in manufacturing, oil and software industries.

In addition, the most complex projects can be divided into several different contracts. They can be carried out under one " turnkey" contract, as well as can be broken down into separate contracts. Design can be carried out by one contract, site preparation by the second contract, and the service/operation of the completed facility under the third contract. They can be broken down into several contracts based on the skills of the contractor, one organization being responsible for production and installation of all necessary equipment for the plant, second organization being responsible for

the site preparation and all construction work, a third being responsible for quality control (external for construction organization), and a fourth being responsible for authorship (to control works going according to the approved design).

They can be broken down into small numbers of large contracts or large numbers of small contracts. Each will give the contractor advantages as well as the disadvantages. Depending on the nature of the project and the skills, contractor must decide.

Finally, different contracts can be operated in different ways. According to Smith N. J. (2002) there are three different ways in which contract can be operated. The first one of which is price-based contract, under which the contractor responsible to provide service, equipment or materials on the fixed price. On the other hand there is a reimbursable contract, under which contractor is reimbursed with the cost of carrying out the work plus profit. Finally, somewhere between these two is the quantity based or rate based contracts.

The type of contract or set of contracts should be selected by the client only after the consideration of the managers available to manage the contract, project goals and the skills required to achieve them, appropriate allocation of responsibilities and risks and time available to carry out the project.

Factors affecting the contract strategy

A number of factors need to be considered before the choosing contract strategy. Responsibilities such as design, construction, quality control,

procurement, safety, installation and commissioning need to be determined.
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The risks also need to be allocated between parties. Then the payment method to contractors, as from this decision depend which contract to use.

When making a contract, contractors always wish to make it flexible, because during the life cycle of the project changes may occur. However, one more important factor is that the contracts need to be fair, equitable methods of price changes for instance.

However, interests of the client and contractor usually opposed to each other. For example, client carries minimum risk under the lump-sum contract, but contractor carries maximum. And vice versa for cost reimbursable plus percentage fee contract.

Almost all of these factors are important for any project. Nevertheless some of these factors may dominate depending on the nature of a project. If the work is a building a power plant in a river, where during the spring period lowest level of water, time-scale obviously dominate. If the work is building the skyscraper, then the quality will dominate.

Client have only one chance to choose the correct contract strategy, after deciding this, it can not be changed. There are a plenty of options, and project manager should advice the client which strategy to accept. The selection is definitely one of the most important decisions in any project.

Smith N. J. states that the project manager should always remember the three “ Rs” of the contract. (Figure 1)

Figure 1 The three “ Rs” (Smith N. J. 2002)

Relationships. Whether being highly structured or not, relationship plays important role in a contract strategy. Unstructured relationship may develop during the life cycle of a project and according to the circumstances. There is no exactly the way under which relationships are managed, they need to be managed individually.

Risks. Whatever type of contract strategy chosen by the client, risks present everywhere. It is important for the client to choose right contract strategy which carries out risks which the client is able to manage. When choosing the contractor, client needs to pay attention on the ability of the contractor organization to manage risks appropriately. By other words, every risk in a project should be divided and managed by each party because if something goes wrong, outcomes might be serious.

Rules. Rules are necessary to keep the relationship in right way. According to the rules, client and contractors make their behavior, and there will not be many conflicts between them.

These Rs are closely interrelated. Relationships, risks and rules formalize one word under which the contract will be governed during the life cycle of the project.

Contractor selection

After the selection of a contract strategy, client needs to select the contractor. The selection of a contractor is a crucial decision made by client. The criteria for selection might be cost, time or quality. Usually the price/cost criteria is dominant as the clients seek the most economic price. However,

according to Smith N. J. (2002) dominating of one of these criteria may negatively affect to others.

Figure 2 Project objectives (Barnes and Wearne, 1993).

This triangle illustrates the conflict between the project objectives. If the client wants to minimize the cost to minimum, it will affect time and quality. The project will be finished with no desired quality and not within the time scale. Oppositely, if the client wish to increase the level of quality, then it affects on the one hand to cost (overbudget), on the other time (not within planned time-scale). Therefore, client always need to decide, which objective is crucial for the current project. This triangle shows the basic problem of contract strategy.

In the planning of the contract, client need to be sure of reason employing a contractor.

Client usually selects a contractor for one or more of the following reasons:

To use the particular management, technical and organizational skills, and expertise of that contractor for the duration of the contract.

To use the skills of the contractor after the project has been completed.

To have the benefit of the contractor's special recourses, such as licensed processes, unique design of manufacturing capability, plant, materials in stock, ect.

To get work started quicker than would be possible by recruiting and training direct employees.

To get the contractor to take some of the cost risks of a project, usually the risks of planning the economical use of people, plant, materials and sub-contractors.

To use the contractor to provide the recourses, both physical and financial, needed for the project.

To be free to use his own (limited) recourses for other purposes.

To encourage the development of potential contractors for the future.

To deal with a contractor who is already known to the promoter.

Smith N. J. (2002)

Whatever the reason, client always should make a decision based on it.

N. J. Smith (2002) described six principal considerations of choosing type of contract which has to be made by contractor. Those are: discipline, incentive, risk, change, time-scale and relationship. These considerations describe analytical justification of contracts, mainly compared the two price-based and cost based contracts. However, in authors' opinion these considerations are actually become an advantages and disadvantages of each form. Therefore, this will be discussed in Chapter 4.

According to the M. Brook (1993) the main aim of contractor selection is to find out the lowest possible price, and the following:

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A reputation for good quality workmanship and efficient organization;

The ability to complete on time;

A strong financial standing with a good business record;

The expertise suited to size and type of project.

Also he agrees that, not only client has to consider financial ability of contractor, but the contractor needs to make sure that the client is able to pay bills on time. In the past contractors have not been considered this issue. However this has changed with the introduction of bonds and guaranties used by both parties.

Usually contractors selected by two or combination of both: competition and negotiation. When there is an open competition, local newspapers or journals invite competitors to take part on the tender. A deposit normally required, in order to distinguish serious offers.

Alternatively, tender might be selective. In this type of tender contractors are selected and invited to tender. M. Brook (1993) determined three ways in which selective tendering lists drawn up:

An advertisement may produce several interested contractors and suitable firms are selected to tender.

The consultants may contact those they would wish to put on an ad-hoc list.

Many local authorities and national bodies keep approved lists of contractors in certain categories, such as work type and cost range.

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Contractors which are selected to add into list normally asked to provide their financial and technical performance, particularly on the area which is under consideration. Contractors can prepare the answers according to the “Standard form of tendering questionnaire – private edition” written by the National Joint Consultative Committee for Building” (NJCC). Questions on it is basically about the projects carried out for last three years. After the completion of questionnaire, it can be used for any further projects or particular project for which contractor invited as a competitor.

On the other hand “Code of Procedure for Single Stage Selective Tendering” written especially for building industry by NJCC. According to this code, project success depends on the completion of design phase before tenders invited and the use of standard forms of contract.

M. Brook (1993) classifies Code as follows:

Preliminary enquiry – contractors are given the opportunity to decide whether they wish to tender by receiving a preliminary enquiry letter, four to six weeks before the dispatch of tender documents.

Number of tenderers – the recommended number of tenderers is a maximum of six (three or four for design and build) and further names could be held in reserve.

Tender documents – the aim of the documents is that all tenders will be received on the same basis so that competition is limited to price only.

Time for tendering - normally at least four working weeks should be allowed, and more time may be needed depending on the size and complexity of the project.

Qualified tenders - tenderers should not try to vary the basis of their tenders using qualifications. Queries or unacceptable contract conditions should be raised at least 10 days before tenders are due. The consultants can then tell all the tenderers of their decisions and if necessary extend the time for tendering. A contractor should be asked to withdraw significant qualifications or else face rejection. This is necessary to ensure tenders are received on a like-for-like basis.

Withdrawal of tenders - a tender may be accepted as long as it remains open; a definite period is usually stated in the tender documents. The tenderer may withdraw his offer before its acceptance, under English law.

Assessing tenders - the tenders should be opened as soon as possible after they are received. Priced bills may be submitted in a separate envelope by all the contractors, or, more likely only the bills of the lowest tenderer will be called for and submitted within four working days. Once the contract has been let, every contractor should be issued with a list of tender prices. Alternatively, tender prices should be given in ascending order and the names listed in alphabetical order.

Examination and adjustment of priced bills - the PQS will treat the information in the tender documents as confidential and report errors in computation to the architect and client. There are two methods for dealing with errors. Alternative one gives the tenderer the opportunity to confirm his

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offer or withdraw it. Alternative 2 allows the contractor to confirm his offer or amend it to correct genuine errors. If the contractor amends his offer with a revised tender which is no longer the lowest, the tender of the lowest will be considered.

Negotiated reduction of tender – the code of procedure recognizes the needs to look for savings in the cost of a project where the tender exceeds the employer's budget. This can be achieved by negotiation with the lowest tenderer, or the next lowest if negotiations fail.

Two-stage selective tendering may be approved by the client, when the contractors involvement is needed at the design phase. The first stage will provide the competitive tender based on bill of quantities according to the preliminary design. The contractor selected at the first stage helps with the design, after completion of which submits documents for the second stage without competition based on the considered price.

NJCC published codes for two-stage selection tender and selection tender for design and build. Those are almost same as the “ Code of Procedure for Single Stage Selective Tendering”, except:

Client should consider contractor's design and build experience. Number of tenderers reduced to four.

The price is not a key issue in the selection of contractors.

Significant interdependence between cost, time and quality should be included in client's requirement.

During the negotiation stage, contractors selected based on their past experience, performance, recommendation or familiarity with work under consideration. And only one contractor may be selected to proceed the work.

Project organisation

Often client employs a design consultant in order to advice on feasibility stage of project, or a project management consultant to advice the strategy and risks. As discussed earlier in previous chapter, it might be appropriate to the client to employ a single contractor for the whole project, or a consortium of companies as well as a two or more separate contractors.

Further in this chapter will be discussed different types of project organisation.

Package deal (“ turnkey”, design and supply)

According to the OGC report (2007), the main contractor has to be an experienced organisation to bring together all of the parties (design, construction, installation ect.) necessary to meet the client’s expectations. Also further information stated in this report “ There is nothing to prevent a designer, facilities manager, financier or any other organisation from acting as the Prime Contractor, providing they have suitable ability and experience. Prime Contracting must demonstrate during the initial occupation period that operating cost and performance parameters can be met. It usually includes such features as pain/gain share (where the Prime Contractor as well as the client gains financially by reducing the project costs), target cost pricing (where prices are agreed on the basis of a reasonable profit for the supply

team and value for money to the client) and open book accounting (where costs are made transparent to the client).

(OGC report, 2007)

In this type of arrangement, only one single contractor carries all the responsibility for the project from start to completion. Although main contractor responsible for the procurement, design, construction, equipment supply, installation, commissioning, these works can be sub-contracted to the specialist organizations. The main contractor usually responsible also for financing, design approval, working and state commissions ect.

Although being simple, this arrangement has its advantages and disadvantages. The main strengths are:

Estimating the cost of the project at the early stage may be possible, the client's requirements are known;

The total cost of the project may be reduced;

Early completion may be possible as result of design/construction overlap;

Easier design integration;

Better project organisation;

Client has to deal with only one organisation for design and construction;

Few recourses from the client need to be involved in a project;

Fewer disputes caused by design failure or other defects.

Weaknesses:

Client's ability to control the contractor will be low;

Client's expectations may not be met;

Highly qualified staff needed to manage the contractor;

No or little contact with the sub-contractors;

Client in a negative position to introduce changes;

Package deal contracts are commonly used in the service and process industries. Where the contractors are much more experienced in this type of contract rather than other types. (other types will be introduced in the next chapter) However package deal contracts are also used in civil engineering field, especially in building standard houses or office blocks. Package deal contracts are very effective when the client wish to start works early, but he has no sufficient recourses and advisors.

Build-own-operate-transfer (BOOT)

This type of contract requires that consortium of companies or single contractor take responsibility to built, own and operate a facility. This usually undertaken by the government for the fixed duration (concession period), during which the client pays contractor (normally monthly). Contractor is completely responsible for the project from start to hand over after the concession period, including gaining necessary finance for the project at the start. At the end of concession period ownership of the facility returns to the client.

Separation of design and implementation

This tends to be the traditional contract. In that type of contract design separated from the construction. This normally achieved by employing the architect (designer) then the contractor for its construction. Despite the fact that there are many available and useful types of contract, this type of contract is still widely used in building and civil engineering industries. In practice, architect or design company supervises the construction process from the client's side.

Smith N. J. (2002) states that, “ Construction is usually undertaken under a quantities/rates based contract, or occasionally under a lump-sum or reimbursable contract”.

Management – contracting

Management contracting is a type of contract where the client employs external organisation to control and manage the design and construction processes. External management organisation itself normally does not take part in any of the works. These are packaged into one or several contracts.

When using the management contracting, client establishes the contractual and organisational system which is completely different from the conventional approaches. Management organisation employed by the client becomes a part of its team, therefore involvement of a client in the project increases.

According to Smith N. J. (2002) payment for the management organisation's staff normally is reimbursable plus fee, oppositely for engineering contracts

this usually be a lump-sum or quantity based. The management contractor is appointed early, and it has a considerable involvement in a design process. Other participants such as design and construction contractors are employed in normal way. Management contracts have considerable advantage in a building and civil engineering industries, where traditional contracts can not be used.

These advantages are listed below (depending of the needs of a client):

Time saving. An early start to the project (political, budgetary or procurement policy reasons);

Therefore an early completion of a project;

When high probability that changes may take place, for instance, high technology or innovative projects.

Organisational complexity. When client does not have sufficient resources or does not wish to manage a number of contractors, which may include two or more designers as well as the construction contractors.

Although thesis has a construction emphasis, in authors opinion it would give the additional information about contracts if offshore oil engineering will be discussed as well. Offshore oil industry uses the same contracts as a construction industry, except concession contracts. However, industry called each contract in completely different ways. For example:

EPC – engineer, procure, construct contract;

PC – procure and construct contract;

EPIC – engineer, procure, install, commission contract;

PIC – procure, install and commission contract.

In construction industry EPIC would be considered as a turnkey contract.

The only one significant difference of oil industry from others is that oil industry contracts, including EPIC (turnkey equivalent) contracts, always concentrate in high level of clients' involvement on the project.

Direct labour

Usually clients does non wish to employ external contractors to install or make equipments or construction activities, instead clients may use their in-house recourses, maintenance or construction department for instance. This is known as a “ direct labour” or “ direct works”.

Each activity, such as design, construction or equipment installation normally responsibility of different departments within the company. These initial agreements are very similar to the external contracts, but the conflicts and disputes between departments would be solved in managerial level within the organisation rather than by external legal dispute resolution procedures.

Bidding strategy

The tendering process begins with the invitation to tender. (from the contractor's point of view).

Usually in practice, building contractors does not submit truly competitive tender. After the receiving the invitation, contractor must decide whether to accept or decline tender. If contractor accept, competitive bid must be submitted, however if the contractor does not accept, the

bona fide tender still should be submitted. (definition of bona fide need here).

Contractors always faced with to crucial decisions which are, whether or not submit competitive tender, and if so what is the bid price should be.

Ansoff (1965) suggested five possible courses of action open for the contractor:

Reject the project

Provisionally accept the project

Add it to a reverse list

Remove a project from the reverse list and replace it with the current project

Unconditional acceptance

However Skitmore (1989) pointed out that the limited time available for tender restricts the use of reverse list, therefore normally contractors decide simply from two accept or reject options.

Althouh contractor rejected the tender, it does not usually mean that the bid will not be submitted. If the contractor not interested in particular tender, but

does not wish to reject (once contractor rejected the tender, it may not be invited to tender again), as it may cause problems in the future, contractor can submit the 'cover price'.

In practice, the decision whether or not to submit a tender depends on number of factors. According to the CIOB (1983), this decision depend on the type of work under consideration, if the contractor has an appropriate experience in particular area and necessary resources to prepare documents and carry out the work. However other authors agree that the key points in the decision would be the contractor's present workload and availability of key personnel.

Odusote and Fellows (1992) made significant effort in identifying the most important factors influencing the contractor's decision. In this research, authors identified 42 considerations which are likely to influence the decision considered by other authors. Then constructed questionnaire and sent them to various building contractors each with a turnover of approximately 8m (or higher) per year. Figure 3 below illustrates these factors based on respond of 48 UK building contractors (ranked in order of importance).

Client-related factors

Type of work

Value of the project

Contractor's current workload

Estimating workload

Likely profitability of the contract

Location of the project

Form of contract

Physical recourses to do the job

Identity of consultants

Time available to tender

Odusote and Fellows (1992)

On the other hand, an American survey handled by Ahmad and Minkarah (1990) identified 31 factors affecting the bidding strategy of top USA companies. Further this list of factors used by Snash (1990) in his study. Snash formulated a questionnaire according to the list of factors, and submitted them to the top UK contractors asking them to rank the most important factor. Finally he received responds from 80 contractors, and the table has been produced based on contractors' respond.

Figure 4 illustrates the ' top 20' factors affecting bid/no bid decision.

Contractors' need for work

Number of competitors tendering

Experience in similar projects

Current work load

Owner/client identity

Contract conditions

Project type

Past profit in similar projects

Project size

Tendering method (open/selective)

Risk owing to the nature of the work

Project location

Type of contract

Availability of qualified staff

Rate of return

Project cash flow

Tender period

Availability of other projects

Availability of labour

Completeness of the documents

(Snash 1990)

There is some similarity between two studies, however that does not necessary mean every contractor has to consider each factor. Some contractor may consider some, but others may consider completely different factors. Contractor should decide rather bid or no bid in particular project regarding his own status and circumstances. By other words, regarding to evidence (Odusote and Fellows, 1992) it can be said, that for large project, it would be decision of group of people rather than one individual.

However, there is an alternative factor affecting bid/no bid decision. Contractors who have a number of contracts (portfolio of projects), can balance their overall risks by deciding to tender particular project. This approach first introduced in the financial sector, which basically says that the contractors can afford the risky projects if the overall risk can be reduced by balancing with the other less risky projects in contractor's portfolio. Kangari and Riggs (1988) pointed out that this approach can not be used as successful as in the financial organisations. They concluded:

...Diversification of the project portfolio can generally reduce but not eliminate overall risk exposure...

Bid price

After the decision to tender, contractor will be faced by the next important decision which is – bid price. Normally contractor estimates the bid price according to the necessary inputs on the process. The management process estimating the level of bid price called adjudication.

A significant number of researches have been carried out for last 40 years about submitting the best bid price. Different studies concentrated various model of bidding. If one researchers developed the mathematical model, method based on historical data, statistical bidding models and econometric based model, others concentrated on less mathematical models such as human decision-making process.

However Moselhi et al. (1993) states:

‘ Markup estimation is a decision problem that is so highly unstructured that it is difficult to analyse and formulate an adequate solution mechanism. It is both time consuming and complicated to identify all the related factors that form a rational basis for such decisions, analyse their individual strength, and then quantify their combined impact on the decision. The usual practice is to make bid decisions on the basis of intuition, derived from mixture of gut feeling, experience and guesses. This implies some sort of pattern recognition is used rather than computation or deep reasoning about the problem elements’.

Alternatively, Park and Chapin summarised their research that:

‘ Many different theoretical approaches to competitive bidding have been proposed and tested with varying results. Any of these strategies should improve the contractor’s bidding effectiveness, and whichever one works best for a particular competitive situation is obviously the best one to use. It will be worth whatever time is required to at least become familiar with the different approaches; they all offer some good ideas, and even a bad plan is better than no plan at all’.

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Factors considered by contractors

Adjudication is the process about getting the best possible bid price, during which contractors should consider number of factors. Eastham (1987) identified 90 factors which are likely to affect the bid price. During the research questionnaire had been sent to ten contractors who identified only five most important factors. However those responds had not considered as important as in Eastham's research.

Subcontract requirements

Type and size of job

Competitors

Client and professionals

Labour requirements

(Eastham 1987)

Snash (1990) also identified factors affecting the bid price. This has been done through formulating the questionnaire.

Degree of difficulty of the work

Risk owing to the nature of the work

Current workload

Need for the work

Contract conditions

Anticipated cost of liquidated damages

Owner/client identity

Past profit in similar work

(Snash 1990)