

CONSTRUCTION MANAGEMENT AS A VIABLE PROCUREMENT OPTION IN COMPARISON TO TRADITIONAL 'SINGLE-POINT' CONTRACTING

Background

The traditional procurement approach in construction is the 'single-point' contracting method using 'master-builders'. The system goes back about 150 years and is still widely in use today.

Progress during the 20th century, however, placed the traditional procurement approach under pressure mainly because of the increasing division of labour and specialisation characteristic of market development over the previous hundred years. New technologies and innovative process design have brought about vertical and horizontal fragmentation in most industries with construction suffering probably what could be termed the worst split (i.e. that design has been completely severed from the activities of construction – a most unique development in comparison with any other industry). The only exception to this rule in South Africa is the 'Design & Build' developer working in niche markets (mostly industrial or residential).

Since the split in the functions of design and construction, both sectors have since endured even further fragmentation as a result of specialist technologies and the restructure of the value chain (see figure attached depicting the relationship of the client to the construction supply chain). This situation has subsequently been reinforced also by the rise of a plethora of professional and market sector organisations that all promote and defend the vested interests of their members. The result is a construction delivery system that has become fraught with discontinuities, duplication, and discontent. Design professionals have not only neglected process development but have also generally withdrawn from the role of management. Meaningful development and innovation in the construction industry, therefore, has lagged behind the progress made in other industries. The most telling proof of this fact is the loss of common purpose in the delivery of the final product that is so evident in the construction supply market today.

In an endeavour to compensate for these phenomena, regular construction clients have, to some extent, introduced alternative procurement methods to try and meet the challenges of structural change and new business imperatives. Government too has also started to play a more active role in this sphere with the introduction of procurement systems that facilitate innovative mechanisms for the financing of public works (e.g 'Build Operate and Transfer', 'Public Private Partnerships', etc.). Changes to procurement systems, however, have been slow, and little has been done to challenge established procurement systems since the start of the new millennium.

Lack of industry development, therefore, has generally left construction widely regarded as the problem child of most modern economies. In this regard, Government and private sector sponsorship have separately, and together, spawned a number industry-related bodies to address specific construction development issues such as productivity, quality, partnering, green buildings, construct-ability, contractor selection techniques and IT aids. The result of all this research, however, has produced very little meaningful change and the application of many of the solutions offered has been half-hearted. Industry has really only paid lip-service, and its experiments with 'bolt-on' subsystems for quality, safety, dispute minimisation, environmental control, sustainable construction, etc. have really only served to lower productivity. Construction Industry Boards in countries like Singapore, Malaysia and, more recently, South Africa have been instituted in the hope of ensuring a more sustainable thrust to the overall development and performance of the industry.

Historical evolution

The *first* significant event that placed pressure on the traditional 'single-point' procurement system was the construction demand placed on the industry at the end of the Second World War in 1945. Increased workload and construction complexity soon exposed the problems inherent in the lack of liaison and relationship between consultants, contractors and their mutual clients. To overcome this problem, private sector clients made use of 'selective tendering' procedures but very little was done to shorten the time usually allowed for pre-contract activities. In the early 1950's, during the boom in urban re-development and industrial organisation, private property developers were the first to experiment with 'unorthodox' procurement practices of 'negotiated contracts' and 'package deals'.

The *second* significant event to challenge the traditional 'single-point' contracting approach was the oil crisis of 1973 and the resultant impact of a worldwide economic recession that lasted until the end 1979. Time and cost parameters of property development came under severe pressure because of high interest rates. It was during this period that the construction industry first came under public scrutiny and was widely criticised for its outmoded procurement practice.

The post-recession period of the 1980's, including the period up to the late 1990's, has seen structural changes in the way building clients do business with the construction industry. Many retain varying levels of in-house expertise and capacity as a way to manage their own on-going construction development and property maintenance programs. Non-conventional techniques used to improve pre-contract periods include 'Bills of Approximate Quantities', 'Negotiated Tendering' and 'Design and Build'. The emphasis of business management from within client organisations has started to focus on the tailor-made design of the project organisation required for construction delivery, and the early development of a comprehensive project strategy and

time-table. Research shows that these so-called 'sophisticated' or 'expert clients' set up bespoke project organisations more and more along the lines of some form of construction management.

During this period, some progress was made with different aspects of procurement. Focus was placed on issues like work packaging, contract types, contractor selection techniques, equitable distributions of risk, partnering, etc. Researchers, however, believe that a major shift in thinking is still required to bring construction procurement practice up to the standards required by a modern economy.

South Africa itself has made very little progress with procurement system development, due mainly to the institutionalisation of the traditional method of procurement by use of the JBCC Principal Building Agreement as an industry standard.

However, powerful drivers for change today include growing client power through internal expertise, and increasing economic pressure brought to bear by the integration of individual and regional markets as South Africa enters to compete in the global economy.

Researchers are starting to look for the quantum leap that will solve many of today's procurement problems. It is clear, however, that there are still large gaps in 'conventional wisdom' and so the construction industry continues to look for significant solutions.

Progress has been made in defining the parameters that affect the selection of procurement options, and systematic methodologies and decision support models have already been devised to optimise procurement protocols and develop complimentary operational sub-systems.

The choice of a particular procurement system is no longer based merely on sub-system issues like contract types, contract conditions, payment modalities, dispute minimisation, etc. Nor does the choice of a procurement system consider only operational imperatives like quality, safety or environmental control. The decision process used to make the final selection of a particular procurement system is disciplined from the time that the construction client first defines the contingent business circumstances that gives rise to the need for the procurement of a construction asset.

Today, final selection of the procurement system takes account of issues like:

- The strategic objectives of the client organisation, policies, etc
- Project specific internal conditions (e.g. client characteristics/capacity; project characteristics; type of spend; etc.)
- Client objectives (e.g. priorities; critical performance criteria; etc)

- Industry specific external conditions (e.g. state of the economic cycle and resultant market conditions; resource availability; supply chain structure; the distribution of supply chain power through the control of key technologies, resources, or unique advantages of capacity; vested stakeholder interests; etc)
- The supply relationship needed to meet the business case (e.g. multiple source/adversarial leverage; preferred supply; single source; sole source; strategic alliance; or in-house)
- The risk profile of the project; and
- The structure of contractual relations necessary to achieve operational alignment of all the above factors (e.g. the choice of control mechanism needed to define the division of roles and responsibilities between
- contractor and client, transactional behaviour and dispute resolution procedures; the apportionment of risk related to issues like design and specification, site conditions, works operations, workmanship and incidents of *force majeure*, etc; and, finally
- the choice of a reimbursement mechanism that balances both the means of project control and the risks assumed by both the contractor and the client).

From the above, it should be clear that there are significant changes in the way the construction industry operates. To continue blindly, therefore, with so-called 'traditional' procurement processes will not necessarily yield the best results without critical evaluation of the likely outcome in terms of strategic and project specific objectives that need to be achieved by the construction client's organisation.

Risk Management and procurement systems.

It is generally accepted that a link exists between risk management and the choice of a procurement system. A primary objective of any procurement system is to secure an optimum level of risk distribution between the client and the contractor. This is one of the main reasons why alternative forms of procurement are used in preference to the traditional 'single-point' contracting method.

There are many sources of risks on projects both internal and external to the building client's organisation (e.g. physical, environmental, design, logistics, financial, legal, technical, political, construction, operational, etc), and very few of them can be addressed and managed adequately merely by the form of contract used to govern the building transaction.

Risks arise from the imperatives that drive the necessity for the procurement of a construction asset, and from contingent market and environmental conditions prevailing at the time of decision and/or implementation. The client, therefore, needs to be acutely aware of the profile of risk that starts to emerge from the strategic objectives of the organisation, business case

imperatives, supply market constraints, etc. and the manner in which they should be controlled through operational sub-systems. Increased integration between financial and real sectors of the economy, and major capital commitments in building, means that poor quality risk management can cause greater damage to desired project outcomes than almost any other single factor of property development.

Several different types of procurement systems have evolved over the years in addition to the traditional 'single-point' contracting system (e.g. 'Integrated Procurements Systems such as 'Design & Build" and a number of related variants, and 'Management Orientated Procurement Systems' of which "Construction Management' and 'Management Contracting' are the more notable - see *Categorisation of Building Procurement Systems* attached). The aim of these alternate systems has been to facilitate the achievement of specific project objectives in circumstances not suitable to the application of the traditional method. Studies show that these alternate systems are suitable to varying situations because of their different characteristics and that they can be viewed as viable choices under different conditions of risk.

During the last fifteen years, the following criteria have been identified as key to establishing a profile of client requirements and preferences for the selection of an appropriate procurement method:

1. Speed during design and construction
2. The level of certainty i.r.o. price and time (and the knowledge of how much the client has to pay at each period during the construction phase)
3. Flexibility in accommodating design changes
4. Quality (i.r.o. the contractor's reputation, performance criteria, aesthetics and design)
5. Complexity
6. Risk allocation/avoidance
7. Responsibility (i.r.o. product quality, design, and construction)
8. Price completion (covering such issues as value for money, maintenance costs, competitive tendering)
9. Dispute resolution, etc.
10. SMME development

It is notable that risk allocation/avoidance is listed as one of the key criteria for the selection of a procurement system (see item 6).

The relationship between risk and procurement systems lies within the area of risk response. Risk response is the strategy used for responding to a risk event. A number of researchers argue that a response to (or allocation of) risk can be accomplished through:

- Risk reduction
- Risk avoidance

- Risk transfer, and
- Risk retention

Selection of an appropriate procurement system is one of the techniques for risk response. Unfortunately, this technique is not utilised to optimal effect on all projects. The reason is that the procurement route most appropriate to the overall balance of objectives to client priorities is not always analysed from those objectives and priorities. Once a client is satisfied about real need and feasibility within overall budgetary constraints, the instinctive reaction is to appoint a design consultant and use the traditional approach as a *default* procurement system.

This is a hasty and unwarranted response to a critical management activity. A more measured analysis is required on each and every project.

Risk management, however, is not just about competency in relation to the limitation of damage. Risk is also about commercial opportunity and the financial benefit to be gained from its assumption. This is a founding principle of business. The party who undertakes to carry a risk on a certain activity should be duly reimbursed as a reward upon completion. This means that buyers and sellers of goods and services should establish, on the basis of their own competence, which risks they are able to accept and which risks they need to pass on.

From earlier comments, it is also clear that the allocation of risk will change in response to the type of supply relationship adopted. For example, arms-length relations (implicit in the traditional 'single-point' contracting method) tend towards strict liability and the passing of risk. Collaborative relations, however, tends to curb opportunistic behaviour and thus frequently enjoy a higher degree of risk sharing between the contracting parties, usually to mutual financial benefit.

Construction Management

Under a construction management approach, professional expertise in the specialized areas of systems analysis, value engineering, "construct-ability" review, activities scheduling, procurement systems, and construction coordination and supervision is added to the capabilities of the traditional project team of client and architect.

The involvement of a Construction Manager during the entire design process as a collaborative yet independent member of the professional team helps ensure that every major design decision is balanced by proper analysis of its cost consequences, and impact on project schedule.

The role of the construction manager on a building project may vary substantially, and can be performed under a variety of contractual terms. The

most traditional, and some would say "purest" form of construction management is that where the Construction Manager acts as the client's agent as a professional consultant, providing estimating, cost control and scheduling services and undertaking administrative responsibilities during construction. Under this arrangement, all construction contracts are executed directly between the owner and contractors. The approach permits the construction work to be broken down into a number of trade contracts thereby eliminating the need for one or more "general" contractors. The elimination of the general contractor avoids a duplication of fees, cost mark-ups and general conditions costs otherwise incurred by the client.

A major benefit of the construction management approach is that, under the disciplined scheduling of the Construction Manager, the project may be phased or "fast-tracked". This permits the overlapping of design and construction activities to permit an earlier start and completion of construction. Overall savings in time of up to 20% using construction management are not unusual when compared with the development periods normally allowed for traditional 'single-point' contracting.

There are a number of circumstances when construction management is the most appropriate procurement route for capital works; in particular:

1. On complex projects where both design and construction risks cannot be fully defined at an early stage and require careful progressive management.
2. On tight time scale projects where fast-track methods are essential to meet the Client's completion date.
3. Where the Client wishes to maintain very close links with the project and with the performance and control of the project development process.
4. On projects where existing user occupation and activities cannot be interrupted.
5. Where the intention is to make large capital projects more accessible to small, medium and micro enterprises in order to benefit emerging contractors from formerly marginalized communities.

Advantages

The Construction Management approach offers numerous advantages over the more traditional forms of construction procurement, many of which can add value to the Client's investment e.g.

1. The Construction Manager acts exclusively in the Client's interests. It is a non-adversarial relationship, and the Construction Manager's sole motivation is the achievement of the Client's project objectives.

2. A high degree of flexibility is built into this method, which enables delays to be overcome or reduced, changes to be absorbed and re-scheduling of work packages to be implemented.
3. The fragmented nature of the construction process, i.e. the use of works packages, means that financial failure of any of the works contractors only has a limited effect on the total project.
4. An improvement in the cash-flow position of individual contractors as they are paid directly by the client rather than in terms of other financial arrangements with main contractors.
5. The construction management system is completely “open book”. The Client is involved fully in the decision-making process at every stage, which means he has full control of all aspects of his project. It also means he is in the best position to take advantage of the expert advice made available to him throughout.
6. The Client retains the flexibility to amend his requirements and phase the decision-making process. This is simply not possible without incurring considerable penalties where clients merely select the traditional or design and build route.
7. The contingency for risk is managed rather than included in the Main Contractor’s price. The Client gets to keep this contingency provision should it not develop into cost.
8. Construction and management expertise is secured throughout the critical pre-construction phase of a project, when fundamental decisions are taken on key issues, which impact on time, cost, quality and ‘build-ability’.
9. The appointment of a high calibre Construction Manager may improve prospects for funding and lower the cost of finance by reducing lenders risk.
10. Construction Management provides the best vehicle for handling ‘fast-track’ operations, facilitating an earlier start to construction and earlier completion, without compromising the cost security of the project. This can give early revenue and reduce construction finance cost.
11. More flexibility is available for dealing with changes, and it minimizes the ‘domino’ effect which is a familiar feature of more traditional contracts.
12. The Construction Manager exercises strict control over the cost planning and cost control of design. Unforeseen problems can more readily be compensated.
13. Competition is maximized. Each trade contract is the subject of a rigorous procurement procedure. The construction cost is the aggregate of the lowest competent tenders, which is not the case for traditional contracting.
14. Construction Management secures the involvement and expertise of trade specialists in areas of design to ensure the optimum building method economy of construction.
15. Construction Management provides more direct control and involvement for the Client, since he is in direct contract with each trade contractor. He is also much better informed.

16. The Construction Manager takes the burden of many day-to-day procedures. The size of the Construction Manager's team can be adjusted to balance the Client's team, to optimize overall management costs.
17. Any savings in cost through the design and construction phases of the project are to the Client's benefit, in the case of general contractor this would result in an enhanced profit.
18. The Construction Manager's costs are offset to some extent by the absence of a "Main Contractor's" staff and overheads (i.e. management costs provided for in the preliminaries account).
19. A reduction in adversarial relationships and careful management of information flow should lead to a reduction in disputes.
20. Unlike traditional lump sum or management contracting styles of procurement, the Client benefits from one party managing his interests throughout the design, budgeting, procurement and construction processes. Design and construction disciplines are not segregated, a division that is the cause of many time and cost over-runs under 'traditional' procurement

Disadvantages

1. A greater assumption of construction risk by the client.
2. A loss of cost and time certainty at the beginning of the project.
3. A greater involvement by the client in administration and operational issues.

Traditional 'single-point' contracting

Traditional 'single-point contracting' is regarded by many as being the customary contracting method. In this method the construction client appoints an architectural firm to design the project and administer the construction process. The Architect must be accessible and available to the builders, preferably on the project site, to clarify the documents and advise on problems as they are discovered. The Architect, as principal agent, has the prime responsibility of reporting on budget and schedule information in a timely manner so that adequate funds are available to complete construction.

The Architect administers the changes to the project and must therefore have adequate skills to negotiate price and impact on schedule.

Many times adversarial relationships develop between the parties early in the contract as the Architect and Contractor adopt positions in order to maximise their negotiating strength for dealing with claims at a later date. The division of responsibilities for issues are foremost in these types of disputes and much time and energy is often spent on building 'cases' rather than resolving conflicts.

Many factors determine if this method is suited to a project. They include whether:

- Plans and specifications been developed that exactly depict the project requirements?
- Sufficient time and resources have been allocated to produce and final design prior to the start of construction?
- The Client or Architect possess the expertise to issue partial documents and yet coordinate the design and construction process to allow concurrency of design and construction activities during multiple procurement processes?
- Budgets and financing allow for expected scope and non-scope changes?

Notes:

Scope changes are ones regarded as different from the tender documents due to any number of issues, including:

- o Unexpected or non-depicted site conditions.
- o Changes to the building's characteristics due to program changes or user requirements.
- o Changes in technology from the design phase to the building phase.

Non-scope changes include:

- o Claims for delay due to lack of design coordination, inadequate or nondescript documents.
- o Ambiguity regarding sub-system design responsibility.
- o Interference with other contractors or public agencies.
- o Interference with existing tenants or occupants.

Advantages

1. This is the traditional approach, which is the most understood contracting method.
2. Construction costs become fixed once the project is awarded, except for changes to the project or to the documents. Inflationary or non-availability costs are no longer a concern of the owner.
3. Given the completeness of the project documents, overall construction costs could be lower. The competitiveness of the industry at the time of tender, however, will have a substantial influence on the prices received.
4. Responsibility and liability for design and construction issues are more easily identified.
5. The use of this method provides a higher degree of certainty that quality and functional standards will be met than when using other procurement systems.

Disadvantages

1. Where tenders are obtained on the basis of an incomplete design, the bids received can only be considered as indicative of final cost and the client is thus vulnerable to claims for additional financial reimbursement from the contractor.

2. The sequential, fragmented and confrontational nature of this system can result in lengthy design and construction periods, poor communication between clients and the project team and problems of construct-ability.
3. Whilst the facility to respond to late demands for change, by introducing variations, can result in satisfied building clients, such action has been identified as one o the main causes of delay and increased cost, and can lead to a permissive attitude to design change.
4. Often, roles of owner, architect, and contractor become adversarial, as responsibility for issues polarize the problem solving process. Contractors become less likely to offer suggestions to solve complex problems inherent in the process.
5. The owner loses much control over the quality of building components. Sole source specifications of building components raise building costs dramatically, and are usually against public policy criteria for free and open competition.
6. Project viability is usually uncertain until tenders have been received. Overall construction costs are estimated through the design phase, but remain uncertain until tenders are closed. Cost consultants are not usually able to estimate the competitive climate at the time of tender, nor are they able to determine conclusively the availability of materials and labour. These issues result in cost uncertainty. The risk that the project will be too expensive remains wholly that of the construction client.
7. Overall construction time is lengthened as design and tender occur sequentially during the pre-contract period. Design must be finalized before the tender documents are released.
8. A large segment of industry expertise is left untapped during the design phase. Formal inclusion of subcontractors and suppliers is replaced with informal consultations, with liability and risk remaining that of the Architect and/or construction client.

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