

FACTORS INFLUENCING THE SELECTION OF PROCUREMENT SYSTEMS BY CLIENTS

**Assoc. Prof. Dr. Maizon Hashim, Melissa Chan Yuet Li, Ng Chu Yin, Ng Sock Hooi,
Shim Mong Heng, Tay Lee Yong**

Faculty of Built Environment, Universiti Teknologi Malaysia, 81310 UTM Skudai,
Johor, Malaysia

maizonhas@yahoo.com

ABSTRACT: *This paper presents the various factors influencing the selection of procurement systems in the Malaysian construction industry. Factors influencing the selection criteria are closely linked with project objectives, both tangible, such as time and cost, and intangible, such as buildability and relationship. The selection of any building procurement system is crucial to the attainment of client objectives with respect of time, cost and quality. The types of procurement systems that have been chosen are the traditional system, design and build system and the management contracting system. The selection criteria that are identified in this paper are time, controllable variation, complexity, quality level, price certainty, competition, responsibility division, risk avoidance, price completion, government policy and client's familiarity.*

Keywords: *Time; Cost; Quality; Risk Avoidance; Controllable variation.*

1.0 INTRODUCTION

It has been recognized that one of the principal reasons for the construction industry's poor performance is the inappropriateness of the procurement systems that have been chosen for the construction projects (Maizon, 1996). Selecting an appropriate procurement system is a complex and daunting task for both the client and the client's advisers. The common criteria concerning the choice of procurement methods include time, certainty, flexibility, quality, complexity, risk, price competition, responsibility, and dispute and arbitration (NEDO, 1985; Skitmore and Marsden, 1988; Love et al., 1998).

Furthermore, the increasing complexity of buildings, the need for greater financial management, the need to reduce design and construction periods and the increasing burden of contract administration have put pressure on the clients to seek alternative approaches to the traditional method (Maizon, 1996). Thus, alternative procurement methods are used due to the increasing awareness of most clients especially in terms of the project performance criteria of time, cost and quality.

2.0 CATEGORIES OF CLIENTS

Basically, clients can be divided into two types. There are the public clients and private clients. The Public clients consist of Government-funded development agencies and Local Authorities. The Private clients consist of property developers, owner-occupiers and investors.

3.0 FACTORS INFLUENCING THE SELECTION OF PROCUREMENT METHODS BY CLIENTS

3.1 Time

Normally, time is identified from inception stage until completion stage. The completion date can be critical, either in terms of generating revenue, or providing needed functional space by a particular deadline. Therefore, a realistic assessment of project duration and sequencing needs to be determined early in the planning process. The schedule should be monitored throughout design and construction (Peek, 2006). 'Time is the essence' is the basic question. Some clients may prefer to start a project as early as possible, whereas some may want to shorten the construction period as to minimize the disruption to their existing operating facilities (Masterman, 1996). Some clients may want to reduce the project duration to the minimum in order to ensure a rapid return on the monetary and other resources that they have expended or to reduce onerous finance charges (Chan, at. al., 2001). Some clients may need a rapid response to their needs. It means that whenever the client has new requirement on that project, the team (contractor or the professional team) may need to respond to the new requirement as soon as possible (Alhazmi and McCaffer, 2000).

To the public clients, time is not the most important factor for them. This is because their main objective is towards public accountability. As for the private clients, their most important criteria are completion on time. This means that they need a procurement method that involves a comprehensive planning at the beginning of the construction period in order to achieve the specified completion time.

If time is regarded as 'crucial' to a client, the following procurement method might be suitable:

Design and Build method

- Suitable for the private clients who want quick return on their investment, especially for commercial projects. The projects can be procured by negotiation rather than competition.

Management Contracting method

- Suitable for the private clients who would want to reduce the project duration so as to minimize disruption to the existing operating facilities.

Traditional method

- Suitable for both public and private clients who want to control the stipulated overall time for the construction projects. All the operations are subject to considerable scrutiny and governed by fairly strict procedures especially in government funded development agencies.

3.2 Controllable Variation

Variation can be known as change order that often occur during construction stage. (Turner, 1990) Variation may occur if the tender/contract information is insufficient or incorrect. Contract information may have to be modified by the issue of variations arising principally from the design team. Subsequent changes in project scope or specification will increase construction costs that are justified by increased profits. Both public client and private client rated controllable variation as a less important factor because they prioritize on quality of work done and the completion time of a project.

If the client is unable to prepare a comprehensive brief and has a requirement for 'controllable variation' high on his list of priorities, the following procurement systems can be used namely:

Management Contracting method

Management organization will manage the controllable variation

Traditional method

The design will be prepared before the tendering process and variations can be kept to the minimum.

Design and Build method

This method can minimize variation because management of the project can be undertaken by a single team which is the design and build contractor.

3.3 Complexity

One of the significant factors that influence the selection of the suitable construction procurement method is the complexity of the particular project. Complexity must be considered in deciding the procurement method because simple construction may best be procured in one way whereas the complex design and construction will be procured in a different way. Project's complexity can be identified by the types of physical services involved, the number of sub contractors, resources in terms of labour, plant and materials, the level of technology and the uniqueness of project activities (Songer and Molenaar, 1997).

Simple projects will rely on the skill and judgment of a contractor by utilizing design and build system. In complex projects, there will be higher levels of nomination because of the need to harness the design skills of specialist trade contractors. Therefore, the more complex a project, the more favorable it is to the private clients rather than to the public clients. It is because public client will emphasize the functionality of the project rather than the prestigious project. Private clients will demand for higher complexity of project because their priority is mainly on the prestige value of the project.

Different levels of complexity will determine the use of different types of procurement system:

Traditional method

Suitable for moderately complex projects. It is because each phase of construction works will be conducted by parties having different expertise.

Design and Build method

Suitable for simple and moderately complex projects. It is because all the design and construction works will be undertaken by one party which will encourage time saving.

Management Contracting method

Suitable for more sophisticated projects. It is because the good management team will ensure that the project will be completed on time.

3.4 Quality Level

Quality level of a construction project is one of the main factors to be considered in the selection of the suitable procurement method. It is worthwhile noting that the quality level was not considered to be radically affected by the procurement arrangement used, but this will depend on the experience of the clients using different procurement methods and the accuracy of the contract documentation provided by the designers and consultants. Quality is the degree to which a set of inherent characteristics fulfill client's requirements. Quality is a subjective value but it need not always remain so. The quality of construction work is dealt with generally in the conditions of a contract, and specifically in the technical specifications. (Keith Coller, 1982)

Comparing between the public and private client, the public client emphasize on the quality factor more than the private clients in selecting procurement methods. This is mainly because the projects are funded by the government and the functionality quality of the completed projects is more important to the client. The government projects include hospitals, schools, laboratories, militaries building and the others. These projects are built based on quality.

The private clients do not consider quality to be an important criterion as factors of value for money, time certainty and accountability are more important to them. Quality of construction will to be monitored and supervised during the construction process.

The level of quality of work in the different types of procurement method is as follows:-

Traditional method

It will produce the highest quality of work. The project is usually competitively tendered to a contractor before work starts on a lump sum basis. The design will be completed before the commencement of construction and thus, the quality of work will be higher. Each process of construction is undertaken by different parties having varied expertise in the building team.

Design and Build method

The whole construction process (pre and post contract works) is undertaken by only one party which will slightly affect the quality level of the construction project. Design and build method is also suitable to the projects that require early completion, so the quality of the work will be affected.

Management Contracting method

It is suitable for projects that require high quality of workmanship.

3.5 Price Certainty

Price certainty is related to the firm price for the total construction cost that will be obtained commencement of the construction period. Price certainty will change, during the life of the project. By getting the firm price before construction of the project, it enables the estimator to produce approximate estimates for the client so that the project cost will be within the financial budget. (Peter, 2004)

Public clients consider price certainty as less important as they focus more on quality and the functionality of the work done. Private client rated it as important since they can control their financial budget by getting the certainty in price.

If a client places 'price certainty' high on his list of priorities, the following procurement system can be used according to the following order:

Design and Build method

Detailed design will establish a high level of price certainty. There is a guaranteed cost and completion date.

Traditional method

Design will be completed during tender stage and it will establish a high level of price certainty except for the fluctuations in the cost of labour and materials.

Management Contracting method

The client is committed to start building on a cost plan, project drawings and specification only.

3.6 Competition

Competition in building procurement is involved at every stage in the building process, as building designers used to compete on quality of service, reputation and fees; building constructors will compete on price; specialists and subcontractors need to ensure that competition is always available if desired (Turner, 1990). Competition on price is an important factor that should be seen among the other criteria for competition (Crowley and Hancher, 1995).

Competition is important to the public clients because of public accountability, that often require them to obtain competitive tenders and also

mainly due to their focus on obtaining the lowest price for a project. Meanwhile, private clients mostly require competition for obvious commercial reasons (Turner, 1990). The following procurement methods can be used in order to achieve the competitive criterion:

Traditional method

In most circumstances, selective or competitive tendering is obtained after the production of tender document with completed detailed design. Negotiated tenders will reduce competitive element.

Design and Build method

The client will find difficulty to compare proposals which include for both price and design. There will be no benefit to the client if the contractor seeks greater competitiveness for specialist works and materials.

Management Contracting method

This method involves price competition in the appointment of the management team and the works packages.

3.7 Responsibility

The responsibility of the building team will be decided when a client chooses whether to appoint a separate management of consultancy works and contractors, or sole responsibility after the briefing stage.

For public clients, the responsibility criterion is less important in the selection of procurement method. The main reason could be that the public clients will have to conform to the needs of the publicly funded bodies to choose the lowest price for the project, as well a satisfying public accountability. As for the private sector, responsibility criterion is important as they focus more on criteria such as time frame, accountability and value for money.

The following procurement method can be used if the criterion of responsibility by the parties to the contract is not a crucial factor:

Design and Build method

This method provides a single point contact and responsibility by the contractor. Therefore the contractor is solely responsible for failure in design or the construction. In short, the client has only one person to deal with if the project is faced with any problems (Ramus, 1996).

Traditional method

This method can be a clear cut division of design and construction works. The client will engage different architects or engineers to design the works and they will take full responsibilities for construction of the works from the pre-tender stage until the completion stage.

Management Contracting method

The client will have to choose the professional team who will be well coordinated through all the stages. The success of the project will depend on the management contractor's skills and an element of trust is essential.

3.8 Risk Avoidance

Construction projects are complex, having a long production cycle and involving many participants and they are therefore, associated with risks and uncertainties. It is important for a client to know how, and to what degree, risk has consciously been passed to another organization, or how it has been shared in some proportion between him and another organization (Turner, 1990).

Public clients consider risk avoidance as mediocre and the least important requirement for them. This may be due to public clients involving central and local government whereby construction expenditures represent a small proportion of their annual turnover. Meanwhile, private clients consider risk avoidance as an important factor towards their project success. Eliminating and reducing financial risk is taken into account as a crucial need by private clients.

It is theoretically possible to have all risks of design, management and time slippage or error put into the hands of one organization. With an excellent “client’s requirements” answered by an excellent “contractor’s proposals”, a design and build contract could possibly pass nearly all the usual risks, at a price, to one organization, to a single contractor. It is not possible to say that one procurement route, as opposed to one type of contract versus another type of contract, has more risk than another procurement route, in all possible circumstances. It will depend on the balance of the project’s priorities.

Design and Build method

All the risks can lie almost wholly with the contractor.

Management Contracting method

The client retain most of the risks.

Traditional method

The risks are generally fair and balanced between the parties to the contract.

3.9 Price Completion

Price completion covers the aspects of value for money, maintenance costs and operational cost. Value for money is the optimum combination of whole life costs and quality (or fitness for purpose) to meet the user’s requirements. In making choices, client should be concerned with life cycle costs rather than the initial construction costs.

For public clients, price completion can be an important factor to them especially where the government procurement policy requires value for money. As for the private clients, ‘value for money’ is not as important as the certainty of completion date and cost whereby their main concern is construction cost.

If clients are concerned with the value for money as an important factor, the following method of procurement can be chosen:

Traditional method

This method allows certainty in cost and time before commitment to build. There will be clear accountability and cost monitoring at all stages.

Management Contracting method

The client is committed to start building on a cost plan, project drawings and specifications only.

Design and Build method

The client can expect a guaranteed cost and completion date.

3.10 Government Projects

Client's choice of procurement method could be affected by the various Government policies. This could be seen where clients have to follow Government's procedures (via Treasury's instruction) in choosing a particular procurement route for government projects. In 1998, the Malaysian Education Minister has instructed that all school projects should be procured by the design and build method because Malaysia need more schools with creative and innovative designs instead of the standard designs that were hardly inspiring. This directive has been terminated effectively from 2006. One of the reasons was that there were numerous schools which were constructed in a hap-hazard manner using inferior quality materials and poor workmanship. An example was the collapse of the computer laboratory in a school in one of the state early last year and the whole nation demand a change in the system of awarding tender to the contractors.

The construction of 13 nucleus hospitals in the whole of peninsular Malaysia was procured by the turnkey method, which is quite similar to the traditional method. The main advantage of this concept is that early completion could be achieved, while incorporating flexibility in design that would cater for future expansion of the hospitals (Rosman, 1994). The Management Contracting method has not been used in any Government projects in Malaysia.

3.11 Familiarity of Method of Procurement

The other factor that will affect the client's selection of the procurement method is their familiarity with the various types of procurement methods available in the construction industry. The construction industry players are not confident to use other procurement methods because they are unwilling to change their mindset and take financial risk in case of failure of the new method.

4.0 CONCLUSION

Selecting a procurement method is a daunting task for the client due to various factors governing a construction project. Different client has

differing needs and requirements whereby construction projects vary so considerably, in every respect, that no single method of procurement can be suitable for every project. The most common criteria influencing the choice of procurement method include time, controllable variation, complexity, quality level, price certainty, competition, responsibility, risk avoidance, price completion, government policy and client's familiarity in a procurement method. The choice of different procurement methods in the construction industry is now so varied, and this has resulted in the need to conduct a selection process for any specific project in a disciplined and systematic manner.

A useful guideline can be drawn based on the three criteria of determining project success of time, cost and quality. The Traditional method will benefit in Cost and Quality but at the expense of Time. The Design and Build method will benefit Cost and Time but at the expense of Quality. The Management Contracting method will benefit in Time and Quality but at the expense of Cost. The above factors can be used a guideline for the professional building team before any commitment is made on the choice of the procurement method for their construction projects.

REFERENCE

- Alhazmi T and McCaffer R. (2000), "**Project Procurement System Selection Model**", *Journal of Construction, Engineering and Management*. Vol. May/June.
- Ambrose, M. D. and Tucker, S. N. (1999), "**Matching a Procurement System to Client and Project Needs: A Procurement System Evaluator**", *Proceedings: Customer Satisfaction: A Focus for Research and Practice in Construction*. Cape Town: University of Cape Town. 280-288.
- Bennett J. and Grice A. (1990) "**Procurement Systems For Building, Quantity Surveying Techniques: New Directions**", BSP Professional Books, Oxford.
- Construction Plus. (2006), "**Client's Guide**". *www.Gardiner.com*. Access on Feb 2006.
- Construction Project Management. (2006), "**The Owner's Perspective**", <http://www.ce.cmu.edu/~cth/pmbook/>. Access on 1 Mar 2006.
- Courtney. R. (2005), "**International Review Of Procedures For Selecting Procurement Routes For Construction Projects**", Part 1 main report, final report, London
- Crowley, L. G. and Hancher, D. E. (1995). Risk Assessment of Competitive Procurement. *Journal of Construction Engineering and Management*. 121(2): 230-237.
- Donald S. (1985), "**Professional Construction Management**", McGraw-Hill Book Company, New York.
- Gillespie, B. (1994), "**Procurement Route**", *Building*, 29 July, 46.
- Keith Collier. (1982), "**Managing Construction Contracts**", Reston Publishing Company, USA.
- Kwayke, A. A. (1998), *Construction Project Administration In Practice*. London : Addison Wesley Longman Ltd.
- Love, P E D, Skitmore, M and Earl, G. (1998), "**Selecting A Suitable Procurement Method For A Building Project**", *Construction Management and Economics*. Vol 16 221-233.

- Maizon, H. (1996), “**The Effects of Procurement Systems on performance of construction projects in Malaysia**”, *Proceedings of CIB W92: North Meets South: Developing Ideas, The University of Natal, Durban, South Africa..*
- Maizon, H. (1997), “**Clients’ Criteria on the Choice of Procurement Systems - A Malaysian Experience**”, *Proceedings of CIB W92: Procurement – A Key to Innovation*. Montreal. 273-284.
- Malcolm Pautz, Ron Watermeyer and Alain Jacquet. (2004), “**Public Construction Procurement In A Global Economy**”, contactable at: <http://www.malcolmp@cidb.org.za,watermeyer@ssinc.co.za,ajacquet@ssinc.co.za>
- Masterman, J.W.E. (2002), “**An Introduction to Building Procurement Systems, 2nd ed.**”, Spon Press, London.
- Members of Freshfields’ Construction and Engineering Group. (1994), “**Management Contracting Law & Practice**”, Cavendish Publishing Limited. Great Britain
- Murdoch. J. (2000), “**Construction Contracts : Law And Management**”, Spon Press Group, London.
- Nahapiet, H., Nahapiet, J. (1985), "A Comparison Of Contractual Arrangements For Building Projects", *Construction Management and Economics*, Vol. 3 No.3, pp.271-81.
- National Economic Development Office (NEDO) (1985), “**Thinking About Building – A Successful Business Customer’s Guide To Using The Construction Industry**”, HMSO, London. National Economic Development Office (NEDO) (1988), *Faster Building for Commerce*, HMSO, London
- P. Boswell, L. Walker (2004), “**Procurement and Process Design**”, FIDIC and Lorna Walker Consulting Ltd, Geneva, London.
- Peck, BV. (2006), “**Construction Management: Choosing The Best Project Delivery Method**”, Construction Management Association of America. <http://www.cmaanet.org/>. Access on Jan 2006.
- Ramus. J and Birchall,S. (1996), “**Contract Practice For Surveyors**”, 3rd Edition. Laxton’s. Great Britain
- Singh, S. (1990), “**Selection Of Appropriate Project Delivery System For Construction Projects**”, *Proceedings of CIB W90 International Symposium on Building Economics and Construction Management*. Sydney, Australia. pp 469-80.
- Skitmore, R.M. and Marsden, D.E. (1988), “**Which Procurement System? Towards A Universal Procurement Selection Technique**”, *Construction Management and Economics*, Vol. 6 No. 3, pp. 71-89
- Smith J., Zheng B., Love P.E.D., David J. Edwards (2004), “**Procurement Of Construction Facilities In Guangdong Province, China: Factors Influencing The Choice Of Procurement Method**”, Emerald FullText Article, Volume 22 Number 5/6 2004 pp. 141-148
- Turner, A. (1990), “**Building Procurement**”. London: Macmillan Education Ltd.