Comparison of Various Procurement Systems
And Their Implication in Project Cost, Time, Quality and Performance

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Introduction: Procurement Systems

Before any of the construction project activities start, there will always be an initial process of submitting a proposal (tender) to manage the undertaking of the project. This process is called tendering process. In construction context, the tender is treated as an offer to do the work for a certain amount of money or a certain amount of profit.

Tendering systems in a wider term is called the project delivery systems or project procurement systems. They are the very first stage in any construction project processes. The dictionary definition of procurement is ‘the obtaining of goods and services’. Put in a construction context this can be taken to mean ‘obtaining the whole spectrum of goods, materials, plant and services in order to design, build and commission a building that delivers the best possible value for money for the client over its life cycle’ (Duncan, 2009). While Masterman (1996) described project procurement as the organizational structure needed to design and build construction projects for a specific client. In other words, project procurement can be defined as the process of obtaining and providing a certain project starting from the pre-construction until the post-construction of the project.

Since there are so many different methods in categorize the types of procurement system, for the purpose of use in this paper, the following categories have been adopted:
1. Separated and co-operative procurement systems
2. Integrated procurement systems
3. Management-oriented procurement systems

Figure 1 shows the various categories of procurement systems as adopted from Perry (1985).

Conventional/Traditional Procurement System

Conventional or traditional procurement system is probably still the most popular tendering system around the world. It sets out the risks among both parties in balance - make it still to be chosen and used by both parties. Under conventional procurement, the design should be completed first before competitive tenders are invited and the contract is executed. Assuming that there will be less changes introduce during construction period, construction costs can be determined with reasonable certainty. The responsibility of both parties is determined clearly. The contractors responsibility include all financial and other risks during construction period, whilst the employers take the responsibility and risk for the design. The employers also have the ability to influence the development of the design to meet their requirements. Moreover, they usually will have the ability to influence the construction process through their representatives acting as their agent.

From the above characteristics, we may conclude some advantages and disadvantages of this type of procurement. In summary, this conventional/traditional procurement system will benefit in cost and quality of the project, but at the expense of time.

Table 1. The Merits and Demerits of Conventional Procurement System

<table>
<thead>
<tr>
<th>Merits</th>
<th>Demerits</th>
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<tbody>
<tr>
<td>Provided that the design has been fully developed and uncertainties eliminated before tenders are invited, tendering costs are minimized, proper competition is ensured, the final project cost will be lower than when using the majority of other procurement methods and the selection of the bid that is most advantageous to the client will present little difficulty</td>
<td>Where tenders are obtained on the basis of an incomplete design the bids obtained can only be considered as indicative of the final cost and the client is thus vulnerable to claims for additional financial reimbursement from the contractor</td>
</tr>
<tr>
<td>The existence of a priced bill of quantities enables interim valuations to be assessed easily and variations to be quickly and accurately valued by means of pre-agreed rates</td>
<td>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 buildability</td>
</tr>
<tr>
<td>The use of this method provides a higher degree of certainty that quality and functional standards will be met than when using other systems</td>
<td>Whilst the facility to respond to late demands for change, by introducing variations, can result in satisfied customers such action has been identified as one of the main causes of delay, and increased cost, and can lead to a permissive attitude to design changes</td>
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</tbody>
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Design and Build Procurement System

Design and build is a fast-track strategy. Construction can start before all the detailed design is completed, but at the contractor’s risk. Under a design and build strategy, a single contractor assumes the risk and responsibility for designing and building the project, in return for a fixed-price lump sum. It is very important, therefore, that the brief and performance or quality specifications for important requirements in the project are fully and unambiguously defined before entering into this type of contract. If requirements are not specific, the employers should provide contractors with a performance specification at tender stage. The contractors develop the design from the specification, submitting detailed proposals to the employers in order to establish that they are in accordance with the requirements of the specification. The employers are, therefore, in a strong position to ensure that their interpretation of the specification takes preference over the contractors'. Specification is a risky area for inexperienced employers. Moreover, the contractors have a legal duty to provide the employers with a project that is fit for its purpose.

From the above characteristics, we may conclude some advantages and disadvantages of this type of procurement. In summary, this design and build procurement system will benefit in cost and time of the project, but at the expense of quality.

Table 2. The Merits and Demerits of Design and Build Procurement System

<table>
<thead>
<tr>
<th>Merits</th>
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</thead>
<tbody>
<tr>
<td>The single point of contact between the client and the contractor that is unique to this category of procurement system means that the client has the advantage of dealing with one single organization that is responsible for all aspect of the project</td>
<td>If, as often happens, the client’s brief is ambiguous and does not communicate his precise wishes to the contractor, great difficulty can be experienced in evaluating tender submissions</td>
</tr>
<tr>
<td>Provided that the client’s requirements are accurately specified certainty of final project cost can be achieved and this cost is usually less than when using other types of procurement systems</td>
<td>The absence of a bill of quantities makes the valuation of variations extremely difficult and restricts the freedom of clients to make changes to the design of the project during the post-contract period</td>
</tr>
<tr>
<td>The use of this system enables design and construction to be overlapped and should result in improved communications being established between client and contractor. These two characteristics enable shorter, overall project periods to be achieved and project management efficiency to be improved.</td>
<td>Although well-designed and aesthetically pleasing buildings can be obtained when using this category of procurement system, the client’s control over this aspect of the project is less than using other methods of procurement</td>
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Management Contracting Procurement System

This is also a fast track strategy which overlaps the design and construction stages and allows early elements of the construction process to be commenced before design has been completed. It is a process whereby an organization, normally construction based, is appointed to the professional team during the initial stages of a project to provide construction management expertise under the direction of the contract administrator. It employs and manages works contractors who carry out the actual construction of the project. He then gets fee for his management services. The main characteristics of this procurement system are:

1. The contractor is appointed on a professional basis as an equal member of the design team providing construction expertise
2. Reimbursement is on the basis of a lump sum or percentage fee for management services plus the prime cost of construction
3. The actual construction is carried out by works or package contractors who are employed, coordinated and administered by the management contractor

From the above characteristics, we may conclude some advantages and disadvantages of this type of procurement. In summary, this management contracting procurement system will benefit in time and quality of the project, but at the expense of cost.

Table 3. The Merits and Demerits of Management Contracting Procurement System

<table>
<thead>
<tr>
<th>Merits</th>
<th>Demerits</th>
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<tbody>
<tr>
<td>This system enables commencement of the project to be accelerated and therefore should enable early completion</td>
<td>The obligation of the management contractor is limited to his management services, which means that the client is liable for the cost of remedying any defects</td>
</tr>
<tr>
<td>Early advice can be obtained from the management contractor on design, buildability, programming, material availability and construction expertise</td>
<td>This type of procurement allocates the majority of the project’s risks to the client</td>
</tr>
<tr>
<td>A variant of the pure system enables the client to obtain, from the management contractor, a guaranteed maximum price (GMP) for the construction element of the project</td>
<td>Where a GMP is obtained the management contractor’s status as the client’s adviser/consultant is jeopardized and there can therefore be the real possibility of a conflict of loyalty</td>
</tr>
<tr>
<td>In this method, the risk of delay is reduced and that time targets are unlikely to overrun</td>
<td>Current research indicates that the project costs incurred when using this system are higher than those generated when using the conventional or design and build system</td>
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**Construction Management Procurement System**

In this type of procurement, the employer will appoint a Construction Manager to manage the overall contract in return for a management fee as with Management Contracting. Also, as before, the project can benefit from early involvement of the contractor. In this process the contracts for the sub-contractors are placed directly between the employer and the sub-contractor and the employer will need to have a high level of involvement during the design development and the construction phases of the work. As with management contracting, the final costs will only be known once the final work elements have been awarded. Similar in concept to Management Contracting, contractors are contracted directly to the employer and the construction manager manages the process for the client on a simple consultancy basis.

Construction Management requires constant involvement by the employer so it is really only suitable for experienced employer. With this method, despite the employer has control over the various contractors, there is some risk need to be considered. This method requires the employer to be deeply involved at all stages of the project, therefore it needs sufficient in-house expertise to be able to coordinate the activities of the construction management and the design consultant.

From the above characteristics, we may conclude some advantages and disadvantages of this type of procurement. In summary, this construction management procurement system will benefit in time and quality of the project, but at the expense of cost.

Table 4. The Merits and Demerits of Construction Management Procurement System

<table>
<thead>
<tr>
<th><strong>Merits</strong></th>
<th><strong>Demerits</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>This method, if correctly applied, can result in a more <strong>constructive</strong> and positive attitude being exhibited at management, supervisory and operative levels</td>
<td>The nature of this system requires the employer to be <strong>deeply involved at all stages of the project</strong></td>
</tr>
<tr>
<td>The fact that the employer enters into direct contracts with the individual works package contractors enables a <strong>high level of immediate cost control</strong> to be achieved and also ensures that the works contractors’ <strong>cash flows are improved</strong> as a result of receiving direct payments</td>
<td>The present position on fees is <strong>confused</strong> as the construction manager’s responsibility vary from project to project and the division of reimbursement into a percentage fee and a lump sum can jeopardize the construction manager’s status and lead to a <strong>conflict of loyalty</strong></td>
</tr>
<tr>
<td>The <strong>increasing use of value engineering</strong> by construction managers is seen as a positive means of improving the value for money provided to employers</td>
<td></td>
</tr>
<tr>
<td>The employer’s increased involvement in the management of the project <strong>promotes better working relationships</strong></td>
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**Comparison of Various Tendering Systems**

Comparison of various tendering systems is important for the employers in order to select the best procurement system to be used in their projects. Since every project is unique, the procurement system may vary for one type of project with another type of project. There are many researches done in this particular area. The most popular one is probably given by Skitmore and Marsden in their book ‘Which Procurement Systems?’ page 71-89. In this paper, there will be 4 (four) aspects to be compared, i.e. cost, time, quality, and performance.

Cost is related to the requirement of a firm price before tender, the overall cost efficiency, how much the employers have the control over cost, etc.

Time is related to the construction time efficiency, can early project start and completion be achieved, etc.

Quality is related to the overall project quality, how much the employers have the control over design and quality aspects, etc.

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Performance is related to the overall project performance, how good is the relationship between parties, is the project conducted in a professional manner, is there any flexibility during the construction process, will the project serve the employers’ needs, how much the employers have the control over project performance, is there any dispute, etc.

Table 5. Comparison of Various Tendering Systems in Relation to Project Cost, Time, Quality and Performance

<table>
<thead>
<tr>
<th></th>
<th>Conventional</th>
<th>Design &amp; Build</th>
<th>Management Contracting</th>
<th>Construction Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>B</td>
<td>A</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Time</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Quality</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Performance</td>
<td>C</td>
<td>A</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

A : >80
B : 50 – 80
C : <50

**Conclusion**

The above comparison is only served as a brief comparison of various procurement systems. It does not give the overall best procurement method for all types of project. It just serves as the general approach for selecting best procurement method for a certain type of project only.

From the above comparison, we may conclude that the conventional system enables a project to be implemented efficiently and cost effectively provided that the complete project documentation is available at the tender stage. The design and build system produces better performance, manages cost and time in both design and construction phases of projects. Meanwhile, the management contracting and construction management have more similarities with only slightly differences, which makes them give the similar comparison. They benefit in time, quality and performance, but at the expense of cost.

**References**
3rd Method: Attachment

Oxford Law Dictionary defines attachment as a court order for the detention of a person and/or his property. It is also can be defined as: 1) enforcement of direction to pay money by attachment of earnings order, and 2) attachment of debts relates to procedure in garnishee proceedings.

It was suggested by the common law commissioners in 1853 that a remedy might be made available to creditors, after judgment, against debts due to their debtors. Accordingly, the Common Law Procedure Act 1854 enacted that any creditor, having obtained judgment in the superior courts, should have an order that the judgment debtor might be examined as to any debts due and owing to him before a master of the court. The rules and regulations under the Judicature Act 1873 retained the process for attachment of debts as established by the Procedure Act of 1854. On affidavit that the judgment was still unsatisfied, and that any other person within the jurisdiction was indebted to the judgment debtor, the judge was empowered to attach all debts due from such third person (called the garnishee) to the judgment debtor, to answer the judgment debt. This order binds the debts in the hands of the garnishee, and if he does not dispute his liability execution issues against him at once. If he disputes his liability the question must be tried. These provisions were, by an order in council of the 18th of November 1867, extended to the county courts.

Below are some possible legal issues when employing attachment.

1. It can be happened when the plaintiff who has obtained judgment against the defendant, shortly after the defendant goes into insolvency or winding up. Whether an attachment can be put into force after the commencement of the winding up.

In the case of Pembinaan KSY Sdn Bhd v Lian Seng Properties Sdn Bhd & Anor [1992] 1 MLJ 571, the plaintiffs (the contractor) has obtained judgment against the defendant (the employer) due to the non-payment from the employer. An agreement was entered whereby the defendant sold their land to other party (the second defendant). Petitions to wind up the first defendant by the plaintiffs and other parties were presented and subsequently the plaintiff entered two prohibitory orders. They also applied to the High Court that the land sale agreement was void. The second defendant applied to High Court to set aside the plaintiffs’ injunction on the ground that once the winding-up petitions had been presented against the first defendant, the plaintiffs had no right to enter the prohibitory orders. Held, allowing the second defendant’s application. Any attachment, sequestration, distress or execution put in force against the property, be it movable or immovable, of the company after the presentation of a petition to wind up the company shall be void.

In the case of Tye Chwee Hoon v Cayman Commodities (M) Sdn Bhd & Anor [1990] 2 MLJ 408, the similar thing happened. The plaintiff judgment creditor obtained a garnishee order against the second defendant as garnishee. At the hearing of the application to show cause, the senior assistant registrar refused to make the garnishee order absolute and one of the grounds relied by him was that as the first defendants were subject to a winding-up petition in the Penang High Court, the proposed attachment or execution was void. (See also the case of Re Barrier Reef Finance & Land Pty Ltd [1988] 6 ACLC 827, (1988) 13 ACLR 708).
2. Whether a judgment must be in existence before any attachment proceedings can be taken.

In the case of *Ramalingam s/o Muthusamy v Chong Kim Fong; Lembaga Kemajuan Tanah Persekutuan Garnishees [1978] 1 MLJ 83*, Mr Kulasegaran on behalf of the garnishee, argued that the order of attachment before judgment taken out by the judgment creditor against the judgment debtor was wrong because there was no judgment in existence when the order of attachment before judgment was made. It was held that section 19 of the Debtors Ordinance 1957 provides for the attachment of a defendant’s property (and this includes debts due to the defendant from a third party) at any time after the issue of a writ of summons and under certain conditions as set out in the section. This section is clearly designed to ensure that a plaintiff who has good cause of action against a defendant is not deprived from levying execution against the property of the defendant in the event of the plaintiff obtaining judgment in his action against the defendant.

**Conclusion**

As I have said earlier, enforcement of arbitration award is of the same nature as enforcement of judgments. There are many types of enforcement; here I only focus on writ of execution, garnishee proceedings and attachment. In implementing these mechanisms, we may face some difficulties and legal issues.

In my opinion, since enforcement of judgments is basically a civil claim, then there must be a limitation period. Therefore, for anyone who would like to enforce their arbitration award through the court proceedings, he must bring it within six years from the date on which the cause of action accrues.

**References**

**Statutes Referred to:**
- The Indonesian Arbitration and ADR Act No. 30/1999.

**Books Referred to:**