

THE IMPACT OF PROCUREMENT METHODS ON THE SCOTTISH HOUSEBUILDING INDUSTRY

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The role for choice of suitable procurement method in the success of construction projects is becoming an increasingly important issue. Recently developed methods put an emphasis on achieving client's objectives as quickly as possible. The research presented in this paper investigates favoured procurement methods and the factors which influence their selection for house building in Scotland; making particular reference to client and contractor perspectives. Following a thorough review of both general construction procurement issues and those related in particular to Scottish housebuildings projects, an analysis of two live projects was carried out to collect real time information. In addition, a questionnaire survey of client adviser and contractor views was undertaken to validate the results. The outcomes and experience gained highlight the fact that many factors have an impact on the selection process. Speed and level of quality is the greatest factor followed by client experience, then the project nature, and finally level of risk and cost. The paper proposes a conceptual framework for understanding factors that are relevant in deciding whether a chosen procurement method is technically feasible.

Keywords: housebuilding, procurement, risk, Scotland.

INTRODUCTION

Construction procurement is an integral part of the process of organizing and acquiring a new project by care or effort within the construction delivery management processes that are associated with the risk identification and management of construction works (Marsh 2003:1). There is a range of different project delivery systems that owners can use in executing facilities. UK construction review suggests that the awareness of alternative approaches to construction procurement has been increased in the UK industry since the late 1960s (McDermott *et al.* 1994). Based on Franks's study from 1967 to 1989, construction procurement approaches had increased steadily (Franks 1989). Turner (1990) stated that procurement "becomes a fashionable subject".

There is still a general agreement that construction procurement is a complex process, and any conclusion about how good or bad the procurement system may be, cannot bring much confidence except if it is measured in terms of some critical factors that influence the outcome of projects. According to the UK Housing Corporation report in 2003, there are a number of procurement routes that can be used in housebuildings projects, such as, traditional contracts, design and build, and so on. But it is important to select the proper route for the type of project and to understand the risks accepted by the client and supplier in using alternative procurement routes (Trimmer and

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Kidston 2003). Many researchers argued that, new ways of working such as partnering, strategic alliances and so on, are, in the long run, more economically viable than traditional methods (Akintoye 1994; Baker 1990; Cowan 1987; Grogan 1992; Nunn 1998; Smith 1997).

On the other hand, in Scotland according to Scottish homes (2000), the traditional route is still the most suitable route by many clients, design team members, and contractor. Whilst, the Office of Government Commerce advised that the traditional procurement route - tendering for the design and construction separately - is no longer sufficient to satisfy the client requirements (NAO 2005). So, it can not be used except any department or agency can prove that the traditional way provides better value for money than any other types of procurement.

In the same context, this research aims to review relevant literature regarding the construction and procurement methods which are used to support the construction process and the role that they play to enhance the project delivery. The main objective is to briefly review factors, which need to be addressed in selecting the best procurement route in the Scottish housebuilding industry to achieve a satisfactory result, and outline a relationship approach between the client's objectives and the project nature. This paper is not about selecting critical factors for success, but about the factors which influence the process of selecting a particular procurement system that leads to success in housing projects. It involves an investigation of a housing project which adopted different forms of building procurement. The role of choosing suitable procurement methods in the success of construction projects is becoming an increasingly important issue (Latham 1994; Love *et al.* 1998; Rwelamila 2000; Lam 2004; Richards 2005). The whole life of a project is subject to change according to market changes or technology evolves and there is no single procurement system which is suitable for all clients and all projects.

SELECTION OF APPROPRIATE PROCUREMENT ROUTE

Selecting a most suitable procurement route amongst the different procurement approaches are used to achieve balance in client's objectives and to ensure best possible agreement between parties (Chege and Rwelamila 2001). According to Turner (1997), the choice of procurement route should be based on the client's objectives and priorities. Love (1996) stated that in addition to client's objectives, the choice should be based on engineering, economic, environmental and social considerations. There are many factors which determine whether a particular style of project delivery method is suitable to a project or not, such as cost (budget), time (schedule), quality (level of expertise), risk assessment (responsibility) and safety (Dhaifallah A 2003). The primary aim of any selected procurement method is the need to achieve the best balance of risk, control, and funding in the whole life of a particular project, as well as, achieving the objectives of the project and the best value for money (OGC 2003).

On the other hand, it has been established that the choice of an inappropriate procurement system is not the only reason for inefficient project management, but people and their experience are far more important than strategy (Lam 2000). Marsh (2003) has also identified that the project success does not depend only on choosing the suitable procurement arrangement or controlling the level of risk, but it depends also on the level of client's and his team participation in project process. As a result of the increasing complexity of the construction industry, it is important to put an appropriate procurement strategy, which will ensure that everybody along the chain of

project delivery is capable of fulfilling the agreed contract. Despite the fact that there is an increasing trend towards choosing a proper procurement strategy to manage a project, there is a decreasing absence of mutual understanding of proper procurement strategy. The research undertaken by Sir Ian Byatt summarises the position of procurement strategy, in September 2000, only 27 % of English authorities had a written procurement strategy in place while 50 % were on their way to producing a strategy (Department for Transport 2001). In March 2002, the Audit Commission found that only 40 % of English and Welsh authorities had a procurement strategy. Moreover, in 2000 the Office of the Deputy Prime Minister (ODPM) research found that only a quarter of English councils had a written procurement strategy in place (ODPM October 2003).

What then is the most important selection criterion? The answer to this question may depend on the size of the project and the extent to which builders are undertaking any new, refurbishment or developmental work. Many researchers agreed that in spite of considerable research into the choice of appropriate procurement systems for construction projects have been prepared, no generally applicable solutions have been found (Skitmore and Marsden 1988), (Bennett and Grice 1990) and (Chan 1995). On the other hand, Love et al (1998) reported that NEDO (1985), Skitmore and Marsden (1988) and Singh (1990) suggested a number of important criteria to establish a profile of the client requirements and preferences for the procurement method:

1. The speed for both (during design and construction) and flexibility in design (involves accommodating things to be added on later stages rapidly).
2. Certainty (awareness of how much the client has to pay at each stage of the project and the specific time that needed).
3. Quality (contractors' reputation, aesthetics and confidence in design)
4. Complexity (client may require identify particular subcontractor for the procurement of major capital construction, or constructability analysis) and the potential of disputes and arbitration.
5. Responsibility including (completion of program, price, product quality, design and construction) and allocation of risk.
6. Price completion: such issues could include competitive tendering, maintenance costs, and value for money.

Furthermore, Lonergan (2004) found that most successful approach for procuring any project depends on the flexibility of the chosen method, contractor's ability to respond easily for variations during construction, start and completion times of a project, the certainty of cost (for example, is a lump sum contract preferred?), and to what degree the principal's consultants have responsibility on design. But, according to (EC Harris 2002) report, there are various factors that must be addressed when choosing a procurement route such as, the framework of the chosen contract that should be followed, the result of a project risk assessment, and identify the factors that might distinguish project development under a traditional mechanism as being most appropriate.

Different Procurement Options in the UK Housing Associations

A number of housing associations in the UK have come into a conclusion that in order to improve both the quality and cost efficiency of their new build programmes, they need to change their procurement methods (Jones *et al.* 2000). The most important

thing which is different than other construction departments, in housing associations projects, a mixture form of procurement can use in some specific circumstances. A mixture form of procurement method depends on; the level of risk the client can accept, and the level of control during the design process. The different procurement options which are used in housing associations are traditional, Design and Build, package deals (Design and Build and package deals have been largely used for new development), partnering(used increasingly),and measured term contracting, prime contracting (used in new construction, refurbishment and maintenance work).

Scotland's Construction Industry

The construction industry has pivotal influence upon the Scottish Economy (Scottish Enterprise 2005). Procurement is an important process, which has been changed remarkably in the past decade, and the requirements of the present procurement routine are to achieve the cheapest solution rather than the achievement of the highest quality (The Royal Fine Art Commission for Scotland, Rfac 2000). As a result of the Egan report, there are substantial changes happening within the construction industry to shift away from traditional procurement methods. In fact, the term "Procurement" has been defined as a way to complete the process of buying goods and services from suppliers wholly (Scottish Enterprise 2005). Scottish Parliament report (2002) concluded that although, traditional forms of procurement has become obvious to deliver poor service to clients with regard to time and cost , new procurement arrangement, such as PFI/PPP, have not considered can consistently deliver design quality. Therefore, according to (Rfac 2000), the commission has advised to review the current methods of design/build models and the PFI and great care needed to continue to be taken especially for the procurement of public buildings and bridges.

The decision on which type of construction delivery method one might select depends upon a number of things. The Scotland's construction industry report (Scottish homes 2000) stated that there are a number of specific criteria to select the most appropriate form of procurement of any project, which is the level of risk the client is able to accept, project nature and difficulty, experience and involvement of client, completion date of the project, budget, possibility of any change that might be happened during construction and design stage, the significance of quality criteria and control of the brief. A research has been carried out by (Rfac 2000) reported that obtaining a good design quality rather than short-term financial concerns must be the first priority in any procurement method. According to Scottish homes (2000), there are a number of contractual routes available to procuring a housing construction project under the principal categories of traditional, Design and Build, and Management Fee (not often used).

Additionally, according to report by Davis Langdon consultancy (2002), currently there is a number of procurement methods available in Scotland housing construction industry, which is traditional, Design and Build, and 'off the shelf' (OTS) purchase from developers. The report concluded that, there is clear evidence that the traditional procurement and Design and Build are the most favourite procurement choice. Regardless of the particular method or methods used to procure projects, each of these routes has its place according to the specific characteristics (Scottish homes 2000). But in order to minimize the risk of increasing cost of construction, the housing (Scotland) 2001 act has evaluated the procurement methods that have been used. The review has recommended adopting a partnering arrangements and longer terming contracts that will lead to avoid uncertainty over contract values (Coutts 2002).

RESEARCH METHODOLOGY

The research methodology involves the analysis of two case studies. The data collection method aimed to focus on the nature of the clients and their requirements, as well as, the specific impact of factors which influence the process of selecting a particular procurement system. There is a range of issues that been investigated: comparison between each method of procurement, identify the critical issues/challenges that faced the project, the type and extent of the problems, and what should have been done to avoid the problems happening in the future. In addition, one of the Authors conducted interviews with a Client Adviser/Designer. The purpose of these interviews was to determine which procurement approach had significant impact on a client's attitude regarding the acceptance of objectives.

Finally, a questionnaire survey has been designed to obtain further information in order to support the research objectives and answer the questions that were raised from both case studies. In this research, we have attempted to gather information and explore the importance of different sources of ideas for designers, clients, and contractors.

The Rothesay Tower Project

The Rothesay tower project, which is located in Rothesay on the Isle of Bute, is one of the affordable homes completed on 2004. The project contains 14 flats, has constructed using partnering arrangement. Use of this method process has ensured that all relevant factors are taken into account during the development phase of the project, enabling the choice of delivery option to be made in light of all the information available. The interview with the project's architect Deveci (August 2005), whose reputation within the field of inexpensive and sustainable housing design is formidable, states that each client has different priorities and a need for different levels of service. He added that the aim is to match our service to the needs of our clients, and provide a consultancy which is responsive and effective. The approval of this method would require all parties involved to sign a contract, which committing to working together in terms of timescale, cost, etc. In terms of a financial plan, the involved parties presented a realistic plan that is clearly executable and reflected the flexibility to customize their approach to meet the long-term financial objectives of the project. Although generic strategies exist, the project concept in creating the most of available technology and reducing energy use during construction and occupation phase was the main reason for this innovation. So, this concept led to design a contractual relationship, and to tailor a system to specifically meet a client's objectives.

It was stated that, in order to achieve Client objectives for the project, this project looked at a number of issues related to the cultural, economical and social aspects of sustainability, and not just the materials and the aesthetics of it. The idea of this project and developed strategies can be managed, to ensure maximizing the value and delivery process within the necessary time-scales. The project cost was an important factor in choosing the procurement method. But partnering arrangement was one of the options available and just a possibility but not the only way to procure this kind of project. Actually the client adviser is responsible to select the procurement method, but this project required an innovative approach to achieve the required objectives. The design has completed at the time of selecting the contractor, and generally, the project completed within budget, quality, and on time. Although the cost gone up slightly, achieving cost reduction of 30% was the main challenge that faced the

project. The most important factors behind project success, is good design, detailed brief that avoid unnecessary and costly changes during the design process, and adopting a best practice in sustainability by using partnering arrangement. In summary, the use of a partnership arrangement from the initial stage among the Client, Builder, and Architect has resulted in highly constructive management of problems with joint solutions provided.

Kincardine O'Neil Project

Kincardine O'Neil project contains 14 houses located in Aberdeenshire, has completed in 2000. This project constructed using traditional contract arrangement. The main cause of applying the traditional method was in the determination of priority areas for optimization, and aiding in potential of saving for both cost and time. So, the lowest price has accepted on this base. According to research from communities Scotland (2005), one of the key issues that arose from this project was the achievement of high satisfaction of tenant, affordable rents, improving a more sustainable economy in the local community context by potential contribution of the tenants, and reduced capital costs against the control project.

On the other hand, it failed to reduce construction time. Rationality from the project architect perspective by Mr. Deveci, the first difficulties with this project were with the planners who wanted to plan a very traditional looking housing with standard vernacular features. In terms of the tendering stages of the project, a major dissatisfaction occurred especially when the contractor who has the ability to provide the pre-fabrication has not won the tender, which represented the second difficulties. The pre-fabrication of the core element for the project is known as a time-saving form of construction. That means the nature of the project and the potential of using some specific materials is very important side in addition to client objectives that should be considered when approaching any project. Finally, because of the cost saving target, minimum specifications were adopted for the heating system and fans. It appeared then, using this specifications caused to greater imperfection problems which identified later by the tenants.

The project architect was questioned on August 2005 about the project characteristics. In the question relating to the key considerations in choosing the procurement method, certain underlying assumptions about decision making are made in proposing that this project will lead to cost and time saving .So, the project either do or should act according to this assumption. If not, the alternative option which is the best way towards achieving this kind of project objectives was partnering arrangement. The client had been advised by the design team to adopt a traditional route. While the planner attempted to encourage the most traditional looking houses with standard vernacular features, the design was being completed at the time of selecting the contractor, as well as , using pre-fabrication methods to give greater control. This, while preserving the time saving advantages of design and build. The most difficult risk that the project faced was the requirement to meet cost savings of 30% from the normal housing price. The traditional tendering, which used as a means of selecting the lower price, is based on price competition process, in the same time has led to put a contractor who can use the pre-fabrication of the core element for the project outside the contract. In order to achieve the specified cost saving 40% of normal housing price, in addition to minimum specification of heating system has been used; the innovation had been limited by this factor. Although, the project has faced the above identified risks and the cost gone slightly up, because of maintenance issues, it should

be noted that the project has completed within budget, quality, and on time. The factors that are behind project's success are: a detailed design to make clear unknown elements and without changing the details that affect the cost, in addition to careful planning and specification.

DISCUSSION

The two projects met the required completion time within budget to an agreed quality although they were built through different procurement approaches. In the Rothesay Tower project, cost was an important factor in choosing the procurement method. Good design, detailed brief, and adopting a best practice in sustainability by using partnering arrangement, was the most important factors behind project success. While in Kincardine O'Neil project, the main issues that affected the client's adviser decision to adopt traditional method were achieving cost and time saving. But the project faced limited innovation and skill shortages. In order to clarify some issues raised from the analysis of the case studies, a total of 36 surveys carried out among a random sample (21 with client adviser or architect and 15 with house builders), consists of nine questions. One of the more surprising findings was the low awareness of using partnering arrangement and traditional, design & build methods still the most used method in Scottish house building projects. Considerations in choosing procurement method, from both client and contractor perspective, included that speed (during design and construction) and quality level the most important factor and level of risk and cost the least factor.

Following a thorough review of both general construction procurement issues and those related in particular to Scottish housebuildings projects, as well as, analyzing the result of both case studies it could be seen that the project nature and client objectives are the most important element. This means it must be taken into consideration that each method should be applied only in appropriate circumstances. Saving small amounts of money during construction may not be worthwhile if the result is much larger operating costs or not meeting the practical requirements for the new facility satisfactorily. The overall results show that there are holes in client's knowledge that need to be filled and urgent action is needed. A driving force is needed to encourage the clients and their adviser into the right areas. There must be an increased emphasis on the need to review and careful consideration should be given to all relevant factors so that everyone can make their contribution to the integration in novel issues.

What then would be the wider and powerful criteria for selecting procurement method? Based on the review of many researchers findings who agreed that in spite of considerable researches into the choice of appropriate procurement methods have been prepared, no generally applicable solutions have been found (Skitmore and Marsden 1988), (Bennett and Grice 1990) and (Chan 1995), toward this end, this paper outlines conceptual framework -as a starting point- to include the criteria indicated below in which clients can approach the challenge of identifying the factors which influence the process of selecting a particular procurement system barriers. This framework consists of:

Client objectives included – *to save money, increase quality, and reduce risk*. It is important that clients define their specific needs and objectives in sufficient detail (Davis Langdon consultancy 2002). Selected method must identify and implement initiatives to improve the project delivery. These initiatives require skilled people, standardized processes, and superior technology unified and driven by effective

project management. Clearly articulate how to manage risks and develop risk-management strategy.

Project nature includes- *cost, size, urgency, and complexity*. Outline a plan of action that describes the scope and detail of how the proposed project will be accomplished. Detailed review must be undertaken in terms of project priorities before any progress can be made toward developing methods, as well as, summarized costs and service levels. Thus, owners must be very concerned with the nature of the finished product as well as the cost of construction itself. They will also need to describe the process to ensure that the suppliers and products are chosen fairly and accurately. Cite factors that might accelerate or decelerate the work and state the reason for taking the proposed approach rather than others.

This paper presents a contribution to the factors which influence the selection of procurement method for house building projects in Scotland. The framework presented in this paper is not a magic way for creating tools for selecting a particular procurement system; rather, it is a conceptual exploration of some of the possibilities.

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