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BARRIERS OF TRADITIONAL PROJECT DELIVERY SYSTEM IN ACHIEVEMENT OF PROJECT GOALS

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Although traditional project delivery system is one of the project delivery systems that is preferred by both public and private owners, characteristic of the system constitutes some barriers in achievement of the project goals. In the scope of this study the barriers caused by traditional project delivery system were revealed for achieving the basic project goals which are quality, time and cost. For this purpose impact of the relationships between the participants and workflow process of the system were examined in achievement of the quality, time and cost goals of the project. It is found out that impossibility of contractor`s involvement to design process, adversarial relationships among the participants, impossibility of using fast track and uncertainty of final project cost because of the unexpected project changes are the main barriers that have impacts on main project goals.

Keywords: Traditional system, Relationship between participants, Workflow process, Project goals.

1 INTRODUCTION

A project delivery option is defined as a method for procurement by which the owner`s assignment of ‘‘delivery’’ risk and performance for design and construction has been transferred to another party (parties) (Clough 1981, Mahdi and Alreshaid 2005). Traditional project delivery system is the most common procurement system and it is referred to as “design-bid-build” option (Mahdi and Alreshaid 2005). This system is also known as hard bid or the low bid method. This is still considered the traditional project delivery method for design and construction where the design precedes the construction and the contracts provides either a lump sum or unit price bid to obtain the work (Ohrn and Rogers 2008).

Although traditional project delivery method is one of the main alternative delivery methods that is usually preferred by public and private owners, it is clear that traditional system has some weaknesses in terms of project performance. Project performance can be measured and evaluated using a large number of performance indicators that could be related to various dimensions (groups) such as time, cost, quality, client satisfaction, client changes, business performance, health and safety (Cheung *et al.* 2004, DETR 2000, Enshassi *et al.* 2009). Time, cost and quality are, however, the three predominant performance evaluation dimensions (Enshassi *et al.* 2009). In the scope of this study barriers of traditional project delivery system in

achievement of quality, time and cost goals were revealed. Due to the complexity of the construction work, relationships between the participants and workflow process of the system have important influence on achievement of these project goals. Therefore barriers were determined by explanation of these two main problem areas in the scope of the study.

2 RELATIONSHIPS BETWEEN PARTICIPANTS IN TRADITIONAL PROJECT DELIVERY SYSTEM

This is a familiar delivery method to most owners and requires a defined scope prior to bidding (El-Sayegh 2007). The owner, designer (architect) and contractor are three prime players of traditional project delivery system. In traditional arrangement the owner has two separate contracts: one with the designer and one with the contractor (Figure 1). The designer is responsible to the owner for the design of the project and also administers the construction contract as the owner`s representative (Mahdi and Alreshaid 2005). The designer deliverables includes plans and specifications for the construction of the project. These documents are subsequently used by the owner as the basis to make a separate contract with the contractor (Hale *et al.* 2009). The contractor is responsible to the owner for the proper construction of the design and is responsible for methods and procedures of construction. This creates an independent relationship between the designer and the contractor with each directly responsible to the owner (Mahdi and Alreshaid 2005). Two separate contracts, with two separate entities, are utilized by owners to complete one construction project, including two solicitations and procurement steps (Hale *et al.* 2009). The separation of the designer and the contractor in this system creates a system of checks and balances because the designer and the contractor are in a position (Mahdi and Alreshaid 2005).

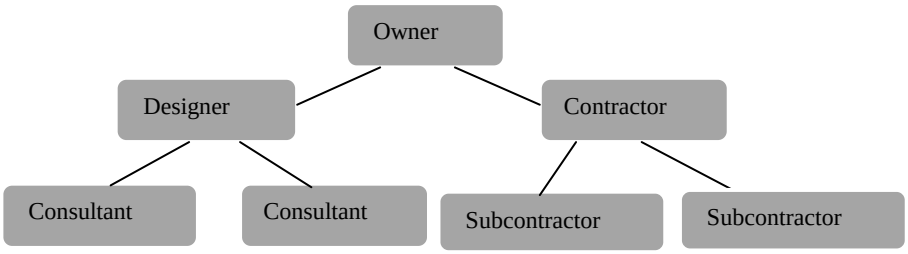

Figure 1. Relationship diagram of participants in traditional project delivery system.

Although many methods are used for awarding this contract, the most common approach is to solicit bids from different construction companies. The company providing the lowest bid will then build the project based on the documents produced by the designer (Hale *et al.* 2009).

This contracting system offers the advantage of being widely applicable, well understood, and with well-established and clearly defined roles for the parties involved. It is the most common approach for public owners having to comply with state procurement statutes. Furthermore, it offers the owner a significant amount of control over the end product, particularly since the facility's features are fully determined and

specified prior to selection of the contractor. However, many construction owners have experienced a variety of frustrations using this system, leading to the development of other methods (Titan Reality and Construction 2015).

3 WORKFLOW PROCESS OF TRADITIONAL PROJECT DELIVERY SYSTEM

Traditional project delivery system has a lineer workflow process which consists of decision, design, bidding and construction phases (Figure 2). In decision phase of the system, the design company is hired first to provide design services and develop the contract drawings and specifications (Ohrn and Rogers 2008). In design process, after the approval of preliminary design, the designer uses in-house staff (or alternatively, consultants) to prepare fully completed plans and specifications that are then incorporated into a bid package (Trauner Consulting Services 2007).

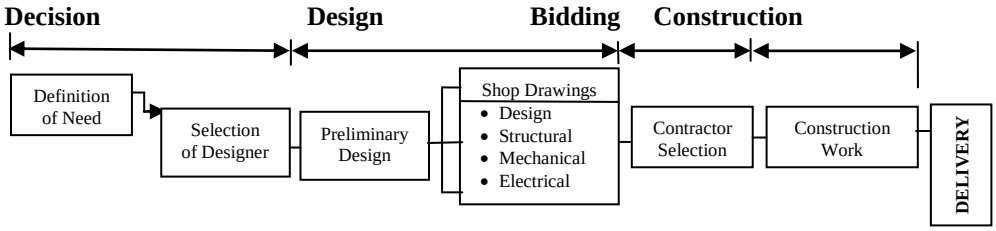

Figure 2. Workflow scheme of traditional project delivery system.

At the end of the design phase, the designer assists the owner in the bidding phase and selecting the contractor (Ohrn and Rogers 2008). The design package is presented to interested general contractors, who prepare bids for the work, and execute contracts with subcontractors to construct various specialty items. In many cases, the contractor submitting the lowest responsive bid is selected to perform the construction. This contractor is then responsible for constructing the facility in accordance with the design. The designer typically maintains limited oversight of the work and responds to questions about the design on behalf of the owner. The designer may also assist the owner in administering the construction contract, including determination of project progress, for interim payments made to the contractor (Titan Reality and Construction 2015).

4 BARRIERS OF TRADITIONAL SYSTEM

At the beginning of the project, main goals of the project participants are to finish the design and construction process as possible as shortest time with a highest quality at a lowest cost. Because of the involvement of multiple different participants, achievement of these goals might be difficult especially for the owners and the owners might face with different barriers. Main sources of these barriers that have influence on project goals in traditional system can be evaluated under two different headings as:

- Barriers caused by relationships between participants
- Barriers caused by workflow process.

4.1 Barriers caused by Relationships between Participants

One of the main barriers related to relationships between the participants is the lack of involvement of the construction professional during the design phase. In this system the contractor can't be part of the design process. The designer's drawings don't necessarily show the assemblies that the contractor chooses. This means that the contractor junks about half of the construction drawings and replaces them with shop drawings. The amount paid to the designer for those wasted drawings amounts to roughly 1-1½ % of the construction cost (Thomsen 2006). Because the quality, price, and completion date of the contract are all established by the contract requirements, there is little incentive to the contractor to provide any expertise beyond what is minimally required to obtain and complete the project within the requirements of the contract (Ohrn and Rogers 2008).

Another barrier related to relationships is that traditional system "tends to create an adversarial relationship among the contracting parties, rather than foster a cooperative atmosphere in which issues can be resolved efficiently and effectively" (Trauner Consulting Services 2007). Characterized in another way what this states is that the traditional project delivery method provides an incentive for the parties to the contract to not create a cooperative project atmosphere (Ohrn and Rogers 2008). As a result of this two barriers, quality goals of the project cannot be succeeded properly.

4.2 Barriers caused by Workflow Process

Another part of the barriers are related to workflow process of the system. Traditional system process takes too long. Because the construction drawings are used for the core of the contract with the contractor, construction work can't start until all the drawings are done (Thomsen 2006). It is a linear sequence during which the owner, procures the designer`s design services separate from the procurement of the construction services. The design must be fully completed prior to the procurement of the construction services. This is due to the fact that the procurement of construction services is typically based upon a hard bid price which cannot be assembled until there is a full set of plans and specifications (Ohrn and Rogers 2008). Nonuse of fast track because of the linear sequence of traditional system`s workflow process constitutes an important barrier in terms of the project time goals.

Another barrier which has influence on achievement of cost goals of the project is the owner's misconception that the bid price is the final price. Designer plans and specifications are rarely if ever perfect and the contractor's interpretation of the plans and specs rarely if ever match the intentions of the designer. As result of this, it is common place in construction process that there will be changes and change orders. This often has the untended consequence of placing a stress on the business relationships between the owner, design professional, and the contractor (Ohrn and Rogers 2008).

5 CONCLUSION

Although traditional project delivery method is seen as the primary project delivery process, when compared with alternative project delivery systems, the traditional system is insufficient in terms of meeting project quality, time, and cost goals.

Nature of the relationships between the participants in traditional system tends to cause more adversarial relationships among the contractor, the designer and the owner. Potential conflicts between the designer and the contractor because of the adversarial relationships and lack of involvement of the contractor to the design process affects the quality of the project in a negative way. Relationships between the participants are directly associated with effectiveness of the design process including selection of the materials, construction means and methods which are closely associated with quality of the end product. On the other hand participation of the contractor to the design process beside the designer will ensure coordination between design and construction phases. This cooperation will help achievement of the project quality goals in some cases.

Workflow process of the system causes arising of barriers that have effects on project time and cost goals. Impossibility of using fast track because of the linear sequence of the workflow process affects time goals of the project. This leads to longer delivery time. On the other hand increase on number of the changes and change orders as a result of being less flexible for changes causes uncertainty of final project cost. Thus cost goals of the project cannot be irretrievable as claimed by the owner. An owner tends to use traditional system should consider the main barriers that he might be encountered during the project process and he should take measures against to potential risks for overcoming these barriers. Only in this case the owner may be avoided from losses associated with time, quality and cost.

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