The performance of early contractor involvement contracts

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Abstract

Recent developments in the construction market have highlighted the need for alternative procurement models that offer substantial benefits over traditional models, when considering overall project outcomes. Accordingly, there is a need for an improved project delivery method. Early contractor involvement (ECI) is one such model that holds promise for resolving project management challenges in the infrastructure sector. The literature indicates that ECI adopts greater relational contracting principles and more equitable risk allocation than traditional contract types. However, the performance of ECI contracts has not been comprehensively reviewed in the literature, due to the emergent nature of this contract form. An extensive literature review was undertaken to assess the extent of current knowledge in this area, to synthesise such knowledge and to develop the conceptual framework to guide the fieldwork phase of this research, which is planned in the future. That phase will examine the association between relationship quality on the project team and project outcomes. This paper reports on the results of the literature review, which is the first phase of the larger PhD study.

Keywords: procurement, partnerships, collaboration, outcomes, success

1. Introduction

The historically poor performance of traditional contracts has attracted criticism from many scholars (Belout and Gauvreau 2004; Eriksson and Westerberg 2011; Rahman and Kumaraswamy 2004). Moreover, the construction industry is often heavily criticised because of poor project outcomes in terms of time, cost and quality. Traditionally, literature on project performance has focused on this 'iron triangle' (Swan and Khalfan 2007) and client's imperative for immediate project success (Eriksson and Westerberg 2011).

Recent developments in the construction market have highlighted the need for alternative procurement models that offer substantial benefits over traditional models in terms of overall project outcomes (Leiringer, Green and Raja 2009). Eriksson and Westerberg (2011) stated,

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“for a new procurement procedure to be implemented, key change lies in understanding how novel procurement models actually work and effect project performance”.

In Australia, early contractor involvement (ECI) contracts have recently emerged as a more promising procurement approach (Swainston 2006). Resolving the poor performance of traditional contracts is highly important for project success; however, research on this topic is limited. Only a few limited studies exist, due to the emergent nature of ECI contracts (Mosey 2009b; Song, Mohamed and AbouRizk 2009; Van Valkenburg et al. 2008).

Prior research has identified ECI as “a radical change from the traditional business practice” (Song, Mohamed and AbouRizk 2009), resulting in many challenges because contractors are involved in early design stages. Their study singled out contracting practice, culture change and teamwork as the biggest challenges in ECI. Nichols (2007) confirmed this observation, citing difference in culture as one of the major factors causing the poor performance of the ECI model. According to his report, Nichols (2007) suggested the causal factor in these areas is due to lack of understanding of the ECI concept. As there is limited research on ECI and the benefits it can provide, Song et al. (2009) have recommended that people who have been involved on successful ECI model can provide knowledge and experience that can provide a better understanding of ECI. This literature review draws on this practical experience as well as theoretical contributions to understand the positive and negative impacts of ECI.

The idea of involving contractors in early design stages is not new; however, ECI is novel as a contract delivery model (Swainston 2006). The UK pioneered the development of ECI when the Highways Agency (HA) first adopted the model in 2001, and since then, the HA has used this relationship contract as its preferred procurement route. In Australia, the Queensland’s Department of Transport and Main Roads (TMR) introduced ECI in November 2005 with a pilot project, the Maroochy River Bridge Duplication.

In Australia, there are three contract delivery ECI models (Wilson and Abson 2010). The first is ECI contracting, which is like a negotiated D&C contract. ECI is a process in which a contractor and designer work together in a contractual relationship with the client; first to scope and price a project (Stage 1) and then to design and construct a project (Stage 2). Secondly, dECI (double ECI) is a D&C procurement approach that involves selecting two competing groups. Each group consists of a contractor and its designer. These groups simultaneously develop concept designs and undertake pricing. One of these groups is then selected to undertake detailed design and construction. Thirdly, early tender involvement (ETI) is a procurement approach that involves the choice of two or three competing contractors to participate in value engineering and the refinement of a client’s preliminary design (Wilson and Abson 2010). This process amends the design and contributes to the finalization of tender documentation. Generally, the competing contractors will then offer a schedule of rates or a lump sum price based on the refined tender documentation made into a traditional contract (Wilson and Abson 2010).

2. ECI Characteristics

ECI has several distinct advantages over traditional contract types and is emerging as a preferred model for many government client agencies across the globe, notably in Australia, the Netherlands, New Zealand, the United Kingdom and the United States of America (Scheepbouwer and Humphries 2011). ECI can be seen as a hybrid model of relational and traditional contracts (Mosey 2009a; Van Valkenburg et al. 2008), aiming to obtain the benefits of both models. When compared to traditional contract models, ECI will allow greater partnership, as the contractor will work closely with the client in the early design stage, unlike the construct-only model. Furthermore, when compared to traditional contracts such as D&C, risks in ECI are shared equally throughout the project, and until all risks are assessed, the price won't be agreed upon (Wilson and Abson 2010).

The Australian ECI model starts like an alliance project. Depending on the complexity of the project and assessed risks, the project may continue in one of two ways; (1) if design allows less complicated execution and risks are minimal, the contractor will take over execution of the project. In this case, project continues as D&C model. However, (2) the project will continue as an alliance if the risks are too high due to complexity of the project and the nature of these risks. Furthermore, when the client is not satisfied with contractor's performance, the contract will be re-tendered. This scenario does not allow the original contractor to re-enter the project. Since risks are managed as early as possible, ECI are expected to achieve substantial value for money for the client.

As a relational contracting model, ECI requires a close working relationship between client, contractor and designer. The three parties involved benefit from this arrangement as they are able to identify and align goals and objectives building cooperative relationships (Mosey 2009a; Ng et al. 2002). Moreover, closer relationships in ECI models increase trust among these parties benefiting from the open communication while providing solid ground for innovation (Eriksson 2008; Mosey 2009a; Song, Mohamed and AbouRizk 2009; Van Valkenburg et al. 2008) and improving design and construction processes (Eriksson 2008).

However, in order for ECI to be successful, client, contractor and designer need to be jointly committed to best-for-project outcomes (Chan, Chan and Ho 2003). This means that trust needs to exist between the parties. Lack of trust can sometimes exist for the client, when the contractor and designer have no experience in ECI models (Eriksson 2008; Jergeas and Van der Put 2001). As a solution, Eriksson (2008) recommend implementation of soft criteria, (e.g. collaborative ability, shared values) to resolve these issues while the client is selecting their contractor and designers. This approach can be a starting point for building open communication between client, contractor and designer attitude ensuring trust (Ng et al. 2002).

One of ECI core principles is improved risk management, by engaging contractors in early project phases. This approach puts the client in a position to identify and allocate risks more effectively (Mosey 2009a; Rahman and Kumaraswamy 2004). Due to this approach, the ECI model requires client, contractor and designer to work in a more collaborative manner.

In ECI, contractors are recognized as having invaluable input to design; therefore, contribution of their knowledge and expertise in early design is expected to improve design and buildability (Mosey 2009a; Song, Mohamed and AbouRizk 2009). Furthermore, contractor's themselves also benefit from ECI since their input has a direct impact on their own performance in terms cost, time and quality. (Gil et al. 2002; Jergeas and Van der Put 2001; Song, Mohamed and AbouRizk 2009). This contribution of knowledge and expertise guaranties contractor's profit through better cost control along with reduced cost for contract administration (Song, Mohamed and AbouRizk 2009).

In summary, previous studies showed ECI can lead to improved project delivery (Chan, Scott and Chan 2004; Jergeas and Van der Put 2001; Mosey 2009a; Song, Mohamed and AbouRizk 2009; Van Valkenburg et al. 2008). This positive impact is possible because ECI can reduce cost due to contractor's early input (Jergeas and Van der Put 2001; Mosey 2009a; Song, Mohamed and AbouRizk 2009; Van Valkenburg et al. 2008). Unlike the traditional contracts, ECI performance arises from the potential for improved relationships as a consequence of improved trust (Chan, Scott and Chan 2004; Jergeas and Van der Put 2001; Mosey 2009a; Song, Mohamed and AbouRizk 2009; Van Valkenburg et al. 2008). As a result, closer relationships on ECI projects can be expected, leading to openness in communication. As client, contractor and designer jointly scope project, ECI projects can benefit from shared and efficient use of resources resulting in delivering projects with improved quality (Song, Mohamed and AbouRizk 2009; Van Valkenburg et al. 2008). Since contractors give their input early in design, ECI models benefit from improved schedule performance as decisions are made in the early phase of the project (Song, Mohamed and AbouRizk 2009).

The main challenge for ECI in the existing literature revolves around the unwillingness of the client and contractor to share vital information (Eadie et al. 2012; Song, Mohamed and AbouRizk 2009). Song et al. (2009) also identified cultural barriers as a major obstacle for successful performance of ECI contracts. Furthermore, existing studies underline the need for better understanding of ECI among client, contractor and designer to enable it to be fully embraced by the practitioners (Mosey 2009a; Song, Mohamed and AbouRizk 2009).

The literature emphasizes that one factor in particular effects project performance - the quality of the relationships between the client, contractor and designer (Eadie et al. 2012; Mosey 2009a; Song, Mohamed and AbouRizk 2009; Van Valkenburg et al. 2008). The reason is that at the early stage of a project, little is known about the project activities and project execution. This means that project uncertainty is at its highest during this stage of the project, especially for projects with a high degree of novelty such as ECI.

As the client, contractor and designer have different interests and ambitions in a project, they will influence the project according to what role they play in relation to the project. This potential influence of the client, contractor and designer is highest in the early phase, before a detailed agenda is set and the cost involved for making changes is low. This implies that the early phase of a project development is the most important time for innovative activities and for planning a project execution that will optimise project outcomes.

3.Conceptual Framework

The impact of project delivery methods on project performance is a well-established topic in the literature (Al Khalil 2002). However, recent studies raise the need to verify links between relationships and outcomes in ECI projects. The majority of ECI studies had found that projects delivered under the ECI method have a better chance of achieving goals when compared to the traditional procurement models (Mosey 2009b; Scheepbouwer and Humphries 2011; Song, Mohamed and AbouRizk 2009; Van Valkenburg et al. 2008). The next phase of this research will examine the features of ECI projects that give them the best chance of achieving goals, by examing the research question: “does relationship quality have a significant impact on ECI project outcomes?”

To answer this question, a conceptual framework that derives from this review and its conclusions is proposed (Figure 1). This framework can be used in any ECI project context and scholars can fine-tune the variables used. This framework can guide researchers with the development of appropriate scales for future studies.

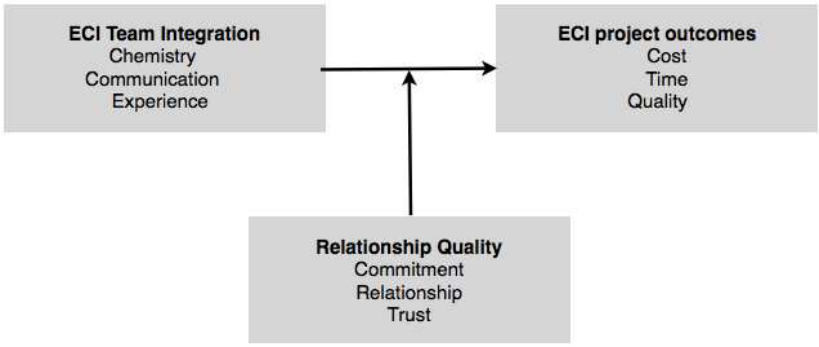

Figure 1: Conceptual Framework

The main challenges in implementing ECI arise from relationships, trust and commitment. These challenges identified in this literature review are the main constructs of the relationship quality concept (Athanasopoulou 2009) that is a starting point of larger PhD study. Future research will address the importance of the early phase of projects as one of the fundamental issues associated with ECI, and the high degree of uncertainty due to their novelty. In spite of the fact that past research shows that how the early phase of a project is executed may dramatically influence the project's outcomes, it is surprising to observe that this has almost been neglected in the Australian construction industry. Another observation is that the current understanding in this industry is limited as to which aspect of ECI has the greatest effect on total project performance. Improved insight into the ECI model will allow stronger involvement of client, contractor and designer in the early phase, and enhanced project outcomes.

In their seminal study, Dwyer, Schurr and Oh (1987) have established relationship quality as a concept made of several constructs. Athanasopoulou (2009) reviewed this and other

literature on relationship quality and found that only three major dimensions - commitment, satisfaction and trust have been validated in different contexts. This is in line with findings of Naudé and Buttle (2000) who also acknowledged that commitment, trust and satisfaction are main dimensions of relationship quality comprehensively studied in the literature. Guided by the extensive relationship quality literature review, the future study will focus on commitment, satisfaction and trust as the key relationship quality drivers impacting relationship quality on ECI projects.

The relationship quality literature emphasises that the participants in a relationship must benefit for it to continue for the long term (Hennig-Thurau, Gwinner and Gremler 2002; Hennig-Thurau and Hansen 2000). In the ECI context, for the client, these benefits can be focused on either the project outcomes or on the relationship itself. The latter types of relationship quality outcomes are referred to as relational benefits. Furthermore, in the context of this study, these benefits are those that client is likely to receive as a result of having cultivated a relationship with a contractor and/or designer in terms of project outcomes.

The impact of relationship quality on operational performance has been extensively researched in the relationship marketing literature (Fynes, De Burca and Mangan 2008; Fynes, de Búrca and Marshall 2004; Fynes, Voss and de Búrca 2005; Su et al. 2008; Van der Vaart and Van Donk 2008). All these studies have introduced numerous performance measures and methodologies emphasising that relationship quality leads to superior operational performance in terms of cost, time and quality, among others. Another common theme to these studies is the role of management in improving performance (Fynes, De Burca and Mangan 2008). However, the relationship quality drivers identified in this study have received little or no attention in the current literature. While relationship quality drivers have been extensively tested in the marketing literature in terms of their impact on relationship performance (Fynes, De Burca and Mangan 2008; Fynes, de Búrca and Marshall 2004; Fynes, Voss and de Búrca 2005; Heide and John 1990; Morgan and Hunt 1994), their impact on ECI performance has received no attention in the project management literature. Accordingly, the future study will examine how relationship quality effects ECI performance in terms of cost, time and quality.

The concept of the study points to the role of relationship quality in building strong relationships between client, contractor and designer in ECI resulting in enhanced relationship quality. The project participants can improve project outcomes by developing relationships based on commitment, satisfaction and trust (Athanasopoulou 2009; Naudé and Buttle 2000). In summary, enhancement of the understanding of the key relationship quality drivers in ECI is critical to the effective management of relationships between the client, contractor and designer.

4.Conclusion

This paper has developed a framework that will help organize the fieldwork being planned for a larger PhD study. The fieldwork will aim to focus on one factor in particular that effects project performance - the relationship quality of the project participants. The rationale for this

research is that, at the early stages of a project, there is a limited research about the relationships in ECI and their impact on project performance. For projects with a high degree of novelty, such as ECI, the uncertainty is the highest in the early stages of the projects. Although the influence of client, contractor and designer is highest in this early stage, there is a dearth of research about how their relationships impact on planning and project execution. These issues are poorly addressed in the literature and will be addressed in the upcoming PhD study.

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