

How can trust facilitate the implementation of Early Contractor Involvement (ECI)?

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Abstract

A successful partnering should begin early, prior to contract award or the procurement selection process in order to deliver the best value to a project. The benefit will be maximised if during the planning and design stages, the construction knowledge is introduced. Early contractor Involvement (ECI), a form of relationship-based delivery system fosters the involvement of contractor in the preliminary stage of a contract and allows the contractor to contribute its construction knowledge to planning and design. A trust-based relationship between owner and contractor is also realised as the foundation for achieving successful partnering. Factors affecting the degree of trust include intention, ability, competence and motive. The more one party believes that another party will fulfil the commitments to the relationship, the more that party will trust the other one. Although there is wealth of literature about ECI and its benefits for all project participants, few paid attention to the impact of trust development between parties on implementing an ECI contract. This paper therefore aims to investigate how trust can improve the innovation and encourage the contractor to share his construction knowledge in the early stage of project based on contextualisation and review of existing literature. The conclusion drawn is that since trust is one of the significant factors in facilitating knowledge sharing and increasing innovation, it should not be treated as a shot in the dark proposition and similar to other aspects of the project, a successfully developed trust-based relationship can be the result of proper management of the entire trust building process.

Keywords: Early Contractor Involvement, ECI, Trust, Knowledge sharing, innovation

1. INTRODUCTION

Emerging project delivery methods increasingly rely on collaboration between project participants, and are aimed at developing longer term positive relationships (Scheepbouwer & Humphries 2011) Early Contractor Involvement (ECI) is one of these newer delivery

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methods which promotes innovation, facilitates value management and value engineering, minimises claims and reduces time and cost of project by involving the contractor at the early stage of the project normally soon after the feasibility planning approval process is completed. The development of ECI was based on the premise that traditional methods create the team much too late in the project development and there is little scope for innovation and consideration of constructability (Edwards 2009), hence using alternative project delivery methods with embedded partnering concept could alleviate some of these issues. In recent years, many countries have utilised ECI mostly for their big, complex projects with a relatively high risk profile however they customise this method based on their needs and situations. Some countries such as UK adopt a relationship-based approach throughout the whole life of the project while others such as Australia adopt a hybrid model where the contract starts with a collaborative approach and moves on to a more conventional type of contract such as Design and Construct (D&C).

ECI , therefore, falls under the relationship-based approach category and as with all relationship-based methods, a critical element in achieving partnering effectiveness, amongst the most common success factors, is establishing and nurturing trust between the project partners (Child 2001; Das & Teng 1998; Ford et al. 2003; Ha, Park & Cho 2011; Lazar 2000) Despite the wealth of literature related to the importance of trust in enhancing the partnership, limited studies have a deeper investigation on the importance of trust in facilitating knowledge sharing by a contractor when the contractor is required to instil its construction knowledge into planning and design stages and in improving innovation embedded in an ECI contractual model. The present paper aims to contribute to this underdeveloped area by synthesising the existing literature relevant to the subject. The structure of this paper is as follow. First, the paper begins by providing some definitions about trust, identifying different types of trust, the generating and developing trust in a relationship, and the factors affecting trust development in a relationship. Second, the influence of trust in knowledge sharing and innovation is examined. Finally, a conclusion is presented, about the role of trust in facilitating the implementation of an ECI

2. TRUST AND ITS CHARACTERISTICS

Trust has been studied widely by many researchers in various fields based on how it is viewed and hence different definitions have been provided to describe its concept. Rotter (1971)views trust as an individual characteristics and defines trust as "a generalized expectancy held by an individual or group that the word, promise, verbal, or written statement of another individual or group can be relied on". Mayer, Davis and Schoorman (1995) have a different perspective on the concept and suggest that trust is an expectation that is related to a specific transaction and the specific person with whom one is transacting where the vulnerability prevails (Bhattacharya, Devinney & Pillutla 1998). They define trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other party will perform a particular action important to the trustor, irrespective of the ability to monitor or control the party" (Mayer, Davis & Schoorman 1995). In contrast to the latter definition, Barney and Hansen have no such limitation on their definition of trust. Their view is that "trust follows from the ability to structure contracts or rewards and punishments so that individuals behave in a pre-specified manner"

(Bhattacharya, Devinney & Pillutla 1998) and define trust as "the mutual confidence that no party to an exchange will exploit another's vulnerabilities" (Barney & Hansen 2006). Bhattacharya, Devinney and Pillutla (1998) suggest a number of characteristics for trust based on combination of the existing scholars and definitions as:

- **Trust exist in an uncertain and risky environment:** in an environment of certainty and sureness, trust doesn't mean a lot or it has very little impact on the outcomes. Individuals are not at the risk of losing any privileges in a non-risky, immune situation and therefore trust cannot exist in such an environment.
- **Trust reflects an aspect of predictability:** trust as expectancy is a multi-dimensional concept (Rinehart et al. 2004) and it is important to recognise which characteristics of trust are being studied. According to Bhattacharya, Devinney and Pillutla (1998), trust is not an expectation but can become part of an expectation and Individuals act based on their understanding of the actions of others and if their understanding changes at any point in time, the way they act will change based on the alteration in their understanding of other people's behaviour.
- **Any definition of trust must account for the strength and importance of trust:** being trustworthy is not an indication that everyone has necessarily the same degree of confidence on the trusted person's behaviour and the importance of her or his behaviour may have different value to them.
- **Trust exists in an environment of mutuality:** the extent to which an individual can be trusted is much depended on the situation that individual encounters and the people with whom she or he would interact.
- **Trust is "good":** speaking of trust indicates positive outcomes not negative. Sometimes the meaning of trust is lost in the sarcasm where the statement ironically aims to express that a person will or will not do something in a negative sense.

As discussed before, trust is defined differently based on the context it is perceived (e.g. personality psychological context (Rotter 1971; Rotter & Stein 1971), social psychological context (Mayer, Davis & Schoorman 1995) and economic context (Dasgupta 2000; Kreps 1990; Zucker 1986)). Thus, proposed trust models by theorists are influenced by these different perspectives. There have been also some theorists who attempted to integrate different perceptions of trust (Barney & Hansen 2006; Lewick & Bunker 1995). However, this paper focuses only on the economic model of trust as the economy is significantly influenced by the construction industry and would also have tremendous effects on the construction (Hampson & Kwok 1997; Harvey & Ashworth 1993; Industry 1998; Lange & Mills 1979). Generally the aim of construction projects is improving the economic situation of involved parties (either public or private sector). Public organisations strive to achieve value for money through their construction projects and are accountable to demonstrate it to tax payers and private construction organisations endeavour to enhance the profitability of their business. This can be through a single construction project or a long-term strategic partnering relationship. Henceforth, the term of trust being used in this paper will address the economic model of trust which dominates the construction environment

3. TYPOLOGY OF TRUST

There are many different kinds of trust and various researchers have classified trust into different categories. Lazar (2000) views the process of creating trust and categorises it into three types and two main domains. He suggests that trust can be (1) rational or calculus where it can grow and develop over time; (2) spontaneous where it appears emergently and unexpectedly in a relationship; or (3) pre-existed where it is already extant typically based on the reputation of an organisation or individual (Bhattacharya, Devinney & Pillutla 1998). The two trust's domains he proposes are Intra or Inter. The intra- domain refers to the relationship between people within a community (e.g. relationship between personnel of an organisation at different levels in the company's hierarchy) and Inter- domain refers to the relationship between two or more different communities (e.g. relationship between two organisations in an alliance). For this paper domain of inter-organisational relationship is examined as the involved partners in a construction project are generally from independent organisations (Contractor, Designer and Client). Since the construction industry is frequently described as being dominated by a 'culture of confrontation' in which a vicious cycle of mistrust, conflict and waste dominates (Seymore & Fellows 1999), it is unlikely that trust between partners exists in forms of spontaneous or pre-existing at the beginning of a contract. Trust in a typical construction environment begins with its lowest level and gradually, if it is meant to, grows throughout the project life time. However, regardless of the type of the trust existing between organisations, the research findings emphasise that a consistent cooperative behaviour is required to maintain spontaneous and pre-existing trust and to develop the rational or calculus one. (Lewicki, McAllister & Bies 1998; Whitener et al. 1998). Lewick and Bunker (1995) categorise trust based upon the source of expectations. Their definition of trust falls under three categories: (1) Calculus-based trust in which the expectations arise from a rewards/punishments mechanism; (2) Knowledge-based trust where the expectations are based on the predictability of others behaviour; and (3) Identification-based trust when the expectations depend on the other's internalised intentions. Barney and Hansen (2006) with modern economic perspective typify trust to three forms: weak form, semi strong form, and strong form. Weak form trust refers to a relationship where neither party has any vulnerability that can be exploited by the other one. In this form there is no need for a contractual arrangement or governance mechanism between parties to build trust. Semi strong form refers to the circumstances when vulnerability exists between parties however there is a risk of opportunistic behaviour by parties and hence trust should be created by a contractual arrangement or governance mechanism. Finally strong form is related to a form of trust where vulnerability exists and regardless of whether or not a contractual arrangement or governance mechanism exists to control the relationship between parties, trustworthiness of the parties is in exchange. This form of trust is developed when opportunistic behaviour would contradict the standards, values and principles that have been internalised by parties to the exchange (Barney & Hansen 2006). Since involved organisations in a construction project are generally bound by a legal contract (except for some types of collaborative delivery systems such as alliancing in which an informal agreement is substituted with a binding contract between partners), the dominant form of trust between the participants typically begins with its semi strong and calculus-based trust where a reward/punishment mechanism is governing the relationship.

4. GENERATING AND DEVELOPING TRUST

Amongst several models proposed by researchers for building and developing trust between organisations intended to work together, this study adopts the model proposed by Child (2001) which is quite applicable to a collaborative approach in the construction context. He suggests that trust in the relation between organisations develops through a process and consists of three major stages:

- 1) **Calculation (Information Stage):** This form of trust is based on a calculation of the probable outcomes related to the risks and cost of maintaining or serving commitment in initiating a business relationship. Trust in new relationships between partners or team members with no other social connections, is likely to be calculative trust. The concept of calculative trust can be applied to the formation of a new collaboration between two organisations. Prior to the formation process, the prospective partners try to learn as much as possible about each other to ascertain the strategies between them are aligned. This stage is of significant importance for the ECI model as the main contractor is appointed through a qualification-based selection process. In this process both client and contractor assess each other against the criteria prevailed in their own organisation. A sound selection process initiates trust between partners from beginning of the contract
- 2) **Mutual Understanding (Mutual Knowledge):** At this stage, the partners develop common pragmatisms as a result of sharing experience and information whilst they are gathering more knowledge about each other. The mutual confidence created through this process rests on mutual knowledge and common experience among the partners. The mutual understanding and predicting the thinking and actions of the other enables the partners to develop the trust between them further and reduce the sense of uncertainty which partners may have about each other. This stage of trust usually happens in an ECI contract whilst the contractor is sharing his construction knowledge and expertise at the design and planning phase of the contract.
- 3) **Bonding:** The third stage is incorporated with strong personal relationships. Long term relationship between parties when they meet each other personally in a regular basis, establishes a mutual psychological bond between them. This form of trust "...permits stable, ongoing relationships to develop, relationships both between people in the collaborating organizations who have a responsibility for (or interest in) the collaboration and between people working on an everyday basis in joint ventures where these have been established. They are in a position to accumulate knowledge about each other, and this tends to reinforce the relationship" (pp. 281-282). This type of trust is unlikely to be formed in a one off ECI contract or when the contract begins with a collaborative approach and proceeds to a transactional one.

5. THE DETERMINANTS OF TRUST

There are many factors that influence trust building between partners. Some studies looked at trust and its associated influencing factors to a more personal level (Ha, Park & Cho 2011; Whitener et al. 1998) while some other studies viewed trust at the inter-organisational trust

(Lazar 2000). As mentioned earlier, this paper focuses on trust and factors affecting trust building at inter-organisational level however, it is noteworthy that trust amongst both dimensions is interconnected (Dasgupta 2000) and both are associated with keeping commitments and demonstrating cooperation (Lau & Rowlinson 2009). Lazar (2000) emphasises on competency and behavioural strategies as potentially important factors in trust development. He asserts that the successful trust development and maintenance highly depend on consistent reciprocal cooperative behaviour and require competency to perform as a component of trustworthiness. Ha, Park and Cho (2011) support this statement by analysing trust within the context of inferential models and categorise it into two areas, namely affective trust and trust in competency. The elements constitute an affective trust include openness, benevolence, liking, honesty, understanding, and respect, while trust in competency consists of the dimensions such as ability, knowledge, skills, business judgment, and specialty. Das and Teng (1998) investigate trust in the strategic alliance context and propose some significant trust building techniques including risk taking, equity preservation, communication, and inter-firm adaptation. In a research conducted by Khalfan, McDermott and Swan (2007), trust is examined in the construction industry. They categorise factors influencing trust in relationships into five main groups: Individual behaviour, company factors, project factors, contract and macro-economic factors. Similarly, Lau and Rowlinson (2009) investigate trust through a number of partnering and non-partnering construction projects from clients, consultants, contractors and subcontractors perspective. They draw a conclusion that keeping commitments and demonstrating cooperation are the typical actions expected from trust. The other factors affecting trust suggested by other researchers include motives, intention, experience, expertise and willingness to reduce uncertainty (Crosby, Evans & Cowles 1990; Zaltman & Moorman 1988).

6. TRUST AND KNOWLEDGE SHARING

Knowledge sharing refers to the process of transferring, distributing and creating knowledge (Soekijad & Andriessen 2003). It is evidenced in knowledge management that inter-organisational knowledge sharing within parties involved in a project, enhances the competitive advantage of all the partners as a whole (Holland 1995). Knowledge sharing is also recognised as one of the key principles of ECI as the contractor contributes his construction knowledge and experience to design in order to deliver best value to a project (Song, Mohamed & AbouRizk 2009). There is, however a wide range of conditions that influence knowledge sharing between organisations. These conditions are related to characteristics of each organisation, the exchange relationship between the parties involved, and the type of knowledge shared (Soekijad & Andriessen 2003). Amongst various conditions mentioned in the literature, trust is recognised as a necessary condition for inter-organisational knowledge sharing (Davenport & Prusak 2000; Dyer & Chu 2000). Trust plays a key role in facilitating and strengthening inter-organisational relationship leading to a profound mutual relationship as a prerequisite for knowledge sharing (Davenport & Prusak 2000; Dyer & Chu 2000; Sahay 2003; Soekijad & Andriessen 2003). Trust is also seen as a means for minimising risks developed by exposure to opportunistic behaviour by partners, uncertainty, ambiguity and incomplete information (Panteli & Sockalingam 2005). In an environment that trust is lacking between partners, the quality and accuracy of knowledge exchanged are likely to be poor (Currall & Judge 1995).

7. TRUST AND INNOVATION

According to Sher and Yang (2005) innovation is any incremental or radical change embodied in product and process, and includes changes in value activities such as service and administration. Egbu (2004) explains this dichotomy between radical and incremental innovation that "Innovation can be radical, in response to crisis or pressure from the external environment, but it can also be incremental where step by step changes are more common" (p.305). Zaltman, Duncan and Holbek (1973) view innovation in the context of organisational culture and borrow the term of innovativeness. They define innovativeness as adoption of an idea or behaviour that is new to the adopting organisation. Innovativeness in organisations is seen as openness to new ideas which stems from the organisation's culture and considered as a measure of the organisation's orientation toward innovation (Hurley & Hult 1998). Innovation within the construction industry context has attracted many researchers' attention in recent years. Rogers (1995) attempts to adopt the industrial innovation concept in the construction while defining innovation as an idea, practice, or object that is perceived as new by an individual or other unit of adoption. Ling (2003) consolidates this statement by providing supposedly the most comprehensive definition of innovation in construction that innovation is an implementation of a new idea to a construction project with the intention of deriving additional benefits, although there might be some associated risks and uncertainties. The new idea may refer to new design, technology, material component or construction method deployed in a project. Given the project based nature of the construction industry, innovation is the actual use of a nontrivial change and improvement in a process, product, or system that is novel to the institution developing the change (Slaughter 2000). Since the construction industry faces consistent changing conditions (Asad et al. 2005), there is a general agreement amongst researchers and professionals that innovation in construction is an essential proponent of success or more prosaically of survival. (Egbu 2004; Gann, D 2004; Khalfan & McDermott 2006; Slaughter 2000; Walker & Hampson 2003). In order to achieve competitive advantage in market, build long-term relationships with clients, increase organisational motivation and make improvements to the systems and processes, it is vital for the construction organisations to be innovative (Asad et al. 2005). Nevertheless, the process of innovation initiation and implementation require an appropriate climate to bring success and improvement. There are different factors that drive or hinder innovation within the industry. The intrinsic characteristics of the construction industry such as industry sector fragmentation, boom-and-bust market cycles, use of relatively low technology, antagonistic procurement policies, project-based nature of industry, and inadequate source of information are known as barriers in the way of innovation (Sexton & Barrett 2003; Toole 1998). On the other hand, in the general innovation literature, there is a range of external and internal drivers that fuel innovation including organisational capability for innovation (Burgelman, Maidique & Wheelwright 2004), attitude and behaviour of parties involved (Blayse & Manley 2004; Gann, DM & Salter 2000), procurement method (Blayse & Manley 2004; Walker & Hampson 2003), type of relationship between parties (Anderson & Manseau 1999; Miozzo & Dewick 2002), regulations and standards (Blayse & Manley 2004; Gann, DM & Salter 2000), and culture of innovation (Blayse & Manley 2004; Love 2002). The influence of trust in innovation has been drawn from some established bodies of innovation knowledge (Ghosh & Fedorowicz 2008; Panayides & Venus Lun 2009) but it is still very much in its embryonic stage in the

construction industry context. A study by Panayides and Venus Lun (2009) highlights that trust can positively influence innovativeness and improve the performance of the all the partners as a whole. Contextualising its finding in the construction, it shows that the parties with high level of trust towards the other parties involved in the project are more likely to adopt innovations and that in the context of a trustworthy relationship such innovations will lead to improvement in performance.

8. CONCLUSIONS AND RECOMMENDATION

Knowledge sharing and innovation are two main components of ECI delivery system which make this method attractive to the construction industry but they have not been sufficiently explored to form a robust body of knowledge about the factors influencing them in their own right. This paper, therefore attempted to investigate the significance of trust as one the essential parameters in these two elements. A comprehensive literature review was conducted to explore the role of trust in building a collaborative relationship, knowledge sharing, and increasing innovation. It is generally accepted that trust is of paramount importance in building and developing a partnering relationship however the adversarial nature of construction industry negatively influences the level of trust between organisations. Trust generally does not appear in pre-existent or spontaneous form in construction and requires an initiator. The qualification-based contractor selection process embedded in the ECI can be potentially seen as an adequate tool to generate trust between the owner and contractor. It is important to notice that the factor of trust has to be considered during this process and should not be treated as a shot in the dark proposition. Once the contractor is appointed and the partnering is formed, the parties should work together to identify improvement areas to maintain and develop the trust. This can be facilitated while contractor is sharing its construction knowledge and experience. To achieve the benefits of inter-organisational knowledge sharing, a cooperative relationship between all the parties is required (Dyer & Singh 1998). Trust and knowledge sharing are mutually constitutive. The stronger trust-based relationship is established, the more accurate and complete knowledge will be shared between partners and vice versa. In addition, although the body of literature on ECI method has not sufficiently addressed the impact of trust on innovation throughout the contract, it stills offers valuable insight into how trust can positively influence innovativeness between the partners and lead to performance improvements. Finally, building and development of trust should be managed carefully at both interpersonal and inter-firm levels with different value bases; and middle managers should understand the value of interpersonal and inter-firm trust (Lau & Rowlinson 2009), thus, trust should not be assumed to emerge innately in partnerships.

9. References

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