Trust in the Construction Industry: A Literature Review

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ABSTRACT

While tremendous focus in management research is placed on new construction technologies, the social and human factors through which these technologies are implemented are often neglected. An increasing trend in construction management research is seen in soft management aspects such as trust. This basically developed from the fact that construction projects involve individuals and their beliefs. Construction projects are based on collaboration among contracting parties to accomplish project goals. Thus, it is crucial to quickly build teams and establish good communications between team members. Trust has been determined by many studies as an excellent determinant to successful projects and crucial to build integrated project teams. The aim of this paper is to present a literature review of research on trust in construction, identify knowledge gaps, and suggest recommendations for future research. More than 50 peer-reviewed publications were reviewed through which six main lines of research were identified. Research in trust in construction seems to primarily focus on four main areas; trust types, factors affecting trust development, trust effect on project success, and relational contracting, yet there still exists knowledge gap in areas of non-relational agreements, North American construction markets, and project cost, risk, and contracts’ relations to trust.

INTRODUCTION

While tremendous focus is placed in management research on new construction technologies, the social and human factors through which these studies are implemented in an organization are seldom neglected (Shields and West 2003). As per the Rethinking Project Management Network, more emphasis must be placed on comprehending the less tangible management aspects of the construction project, such as building trust, organization learning, and building of an organizational culture able to operate with high uncertainty levels (Atkinson et al. 2006). An increasing trend in the construction management research is noticed on the less tangible management aspects, including trust in construction. Trust is proposed by many studies as an aspect that improves the success rate of projects and, thus, should be included within the discipline of project management (Atkinson et al. 2006; Lendra and Andi 2006). With construction projects that mainly aim at achieving a common set of goals through the collaboration of the project participants, it becomes critical for all teams involved to build teams and establish good communications (Swan et al. 2002; Swan et al. 2005). Therefore, it becomes important to study how these teams
are built, how trust is developed, and how trust between team members affects the project’s outcomes (Romahn and Hartman 1999). The aim of this paper is to present a comprehensive review of research literature on trust in construction and identify gaps of knowledge where future research in “trust” should be conducted.

RESEARCH METHODOLOGY

The methodology employed in this paper involves three main steps. The first step involves obtaining peer-reviewed publications (journal articles or conference proceedings) on trust in construction. Since trust is a vast topic addressed in many disciplines, the researchers filtered out publications not related to construction. Publications were primarily obtained by searching major construction journals such as the Journal of Construction Engineering and Management, the Journal of Management in Engineering, and the International Journal of Management in Engineering. The full text of each article was reviewed to eliminate articles that were not really related to trust in construction. More than 50 peer-reviewed publications that conducted studies in trust in construction in the period from 1993 to 2013 were identified. Although the search was not exhaustive, it serves as a comprehensive basis for gaining an understanding of trust research in construction. Second, based on the literature review, six lines of research in trust in construction are identified. Based on the lines of research identified, the final step involves identifying the gaps of knowledge and proposing recommendations for future research.

TRUST

Although trust has been discussed in many disciplines for several decades, it was not before 1980s that it started to gain interest in management (Kadefors 2004; Romahn and Hartman 1999). The way relationships are established and sustained by trust has been widely studied in the fields of social sciences, anthropology, economics, psychology, and sociology. The purpose of this section is to introduce the different lines of research that has been studied in trust in construction for the past 20 years. It would be appropriate though to start by defining what trust means. Trust is a psychological state involving vulnerability, where a belief exists that the individual/organization on whom we depend will meet our positive expectations rather than our fears (Jing and Ling 2005; Lau 2001; McAllister 1995). Although trust and cooperation are directly related (Bijlsma and Koopman 2003), trust is not equivalent to cooperation as a party can meet our expectation induced by coercion rather than trust (Kadefors 2004). It is important to note that individuals can only grant trust, not organizations. Thus, when the term “inter-organizational trust” is used, it means that individuals within the organizations trust the organization to which the other individual is a member (Blois 1999). A literature review of more than 50 refereed publications addressing trust in construction indicates there are six lines of research relating the two topics (Table 1).

Trust types

There are many ways in which researchers have attempted to categorize trust in the construction industry. Wong et al. (2008) categorized trust into system-based, cognition-based, and affect-based. On the same lines, a color of trust model that
specifies three primary colors/types of trust—blue (competence), yellow (integrity), and red (intuitive)—was also proposed (Zaghloul and Hartman 2002; Zaghloul 2003). These primary trust colors can be mixed to form the secondary colors that define trust requirements for different relationships and situations (Zaghloul and Hartman 2002). Others categorized them based on the trust source, such as deterrence-based (expected punishment if trust is breached), knowledge-based, and identification-based (emotions) trust; or simple trust (unchallenged and unquestioned), basic trust (physical and emotional security), and authentic trust (balance between trust and distrust) (Romahn and Hartman 1999; Rousseau et al. 1998). In addition, trust was also investigated, based on the relationship between the parties involved; parties of equal or unequal power, trust based on the belonging to specific groups, or based on past parties’ relationship (Romahn and Hartman 1999). Other trust types were identified, depending on their source whether calculus-based (tangible information), relational-based, and institution-based trust (Kadefors 2004; Rousseau et al. 1998).

Table 1. Lines of Research in “Trust in Construction”

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Factors affecting trust development

Another line of research observed significantly in trust is identifying factors that develop or deter trust. A study by Lendra and Andi’s (2006) aimed to measure the levels of trust in a subcontracting relationship through the considering of internal and external factors. Results showed the trust level in subcontracting relationships is high, with internal factors being more significant than the external factors (Lendra and Andi 2006). Social interaction and attitude on work were also identified in another study as significant factors affecting interpersonal trust (Ding and Ng 2010). On these same lines, Wong et al. (2008) aimed at conceptualizing trust through defining trust types in terms of behaviors that affect trust development. The study concluded that in construction, clients acquire most information from records, i.e., cognitive-based trust having highest influence on trust-building (Wong et al. 2008), which were in agreement with McAllister (1995) study. Structural Equation Modeling (SEM) was used to prove the positive relationship of partners’ trust level to their performance, permeability, and relational bonding (Wong and Cheung 2005).

Other studies aimed at measuring trust levels between project participants such as the Engineering and Physical Sciences Research Council study that developed a trust inventory for assessing trust levels in project teams. The study used Social Network Analysis tool to identify key project relationships (Swan et al. 2002; Swan et al. 2005). Results showed trust is developed through communication, reliance, and reputation (Swan et al. 2002). Cheung et al. 2011 also developed a trust inventory to evaluate the level of the different trust types in projects (Cheung et al. 2011). Romahn and Hartman (1999) stressed the importance of having project managers understand trust and its impact on project success. Based on work conducted in different disciplines, they proposed a two-part trust model that addresses the reasons leading to trust-building between individuals, groups, and organizations (Romahn and Hartman 1999). Other researchers investigated the different perspectives of the parties involved of both building and breaching trust and stated that “there needs to be a cultural change, a move from a ‘blame culture’ to a ‘problem-solving culture’.” (Khalfan et al. 2007). Macroeconomics effect was also investigated as a factor that might affect trust (Swan et al. 2002; Manu et al. 2012). On the other side, Jing and Ling (2005) developed a framework for fostering trust and building relationships through identifying the risks and the respective trust-fostering tools in each project developmental stage. Therefore, with more risks, more trust is needed (Jing and Ling 2005). Chow et al. (2012) aimed at investigating trust-building mechanisms in terms of how the trusting behaviors can be reciprocated. Networking and calculativeness (containing undesired conduct) were found to be positively related to trust expectations (Chow et al. 2012). Wong et al. (2005) adopted “the prisoner’s dilemma” framework which suggests the trust cycle can start by having parties consider cooperation as their priority compared to competition and self-interest, concluding that the contractor could be the initiator of trust (Wong et al. 2005).

Project success - high performance teams and improved efficiency

Trust was also studied in terms of its effect on project success through developing high performance teams and improved efficiency. Chinowsky et al. (2008) focused on the importance of developing high performance teams through the
development of a construction social network model that emphasizes knowledge sharing. The relationship between trust and human perceptions of inter-organizational teamwork was also investigated in a study by Fong and Lung (2007). Webber (2008) examined the effect of teaming with the client through blended service on achieving better client relationship, and thus better project performance. The study showed that client’s trust lead to better team trust, team cohesion, and team performance (Webber 2008) which was in conformance with Karlsen et al. (2008) study conclusions. Pinto et al. (2009) also investigated the impact of trust between project owners and contractors, proving trust importance in better project performance (Pinto et al. 2009).

Trust, among other factors, was also identified as a key indicator for supply chain relationships in construction and was tested for its impact on project performance. The study concluded that the supply chain collaboration and partnering is key in solving performance problems (Meng 2012). Cheung et al. (2013) developed a model that demonstrated how trust affects communication which accordingly influences project performance (Cheung et al. 2013).

Contracts and trust

Although contracts are viewed as a legal document whose main objective is to avoid risk, others see it as a basis for mutual trust between parties (Rousseau et al. 1998). Studies in contracts aimed at exploring the benefits of having less detailed contracts (Kadefors 2004; Lau 2001). Lau’s study questioned whether the details in the contracts can be decreased to provide room for flexibility in contract execution. Their study results showed that although respondents agree that working with a contract with little details is a strong form of trust, they would not feel comfortable working with such a contract (Lau 2001). Along these same lines, Kadefors (2004) study on the factors that influence development of trust and cooperation concluded that the client-contractor relationship, based on the current contract and procurement system, produces an uncooperative relationship (Kadefors 2004). On same lines, Cheung et al. 2006 generated a relational index with trust being one of its factors to test relational construction contracts by comparing different contract types.

Trust was also seen as a very strong aspect in resolving construction disputes. It was included in a model developed to predict mediating outcomes based on tactics employed (Yiu et. al 2006). Trust-building tactics used by mediators were further developed and tested for efficacy based on the mediation outcomes reached, proving to be a great time saving tool (Yiu and Lai 2009). Gad and Shane (2012 and 2013) also investigated the effect trust level have on the selection of dispute resolution method (DRM) in the contract document. It was seen from the study that though experts recommend that trust should be taken in consideration in selecting DRMs, it is not considered by industry professionals in drafting contract documents.

Project cost and trust

Not only does trust reflected in the contract clauses affect the relationship between the involved parties, it also has a significant effect on increase of the total cost of a project (Zaghloul 2003). With trust comes costs that are either direct costs for building it, costs that may arise out of trust breach, or costs of inefficiency due to excessive trust (Kadefors 2004). A study conducted in 1993 by the Construction
Industry Institute analyzed the relationship between cost and trust. The data analyzed supported the “intuitive notion that mutual trust and project cost are correlated” (CII 1993). Ten years later, Zaghloul (2003) conducted a study to determine the premium amount placed on the disclaimer contract clauses that attempt to transfer risk from one party to the other. From administering 300 surveys to construction professionals, it was reported that the premium percentage in construction ranged from 8% to 20%, which are usually based on the party’s business relationship with the owner, project conditions, type of contract, and fairness (Zaghloul 2003). Results show that disclaimer clauses always lead to a loss to at least one party, whether risk evolves to become a problem or not. Consequently, there are opportunities of better risk allocation if a trust relationship is built between the parties. Trust should govern how people deal with project risks, since these risks will vary, depending on the parties’ relationship. In general, trust level in construction industry is low (Zaghloul 2003).

**Project delivery methods and trust**

It is not surprising to see that most research in construction has affiliated trust with partnering as it is known to decrease the adversarial environment, increase cooperation, and reduce inefficiencies in construction projects. Many research studies examined how partnering arrangements are implemented to foster building trust (Cheung et al. 2003; Wong and Cheung 2008; Chan et al. 2004) while other researchers determined trust as a factor that facilitates relational contracting (Kumaraswamy et al. 2005 a & b), alliancing (Laan et al. 2011), strategic alliancing success (Xu et al. 2005), and international joint ventures (Girmscheid and Brockmann 2010). It was found that trust is the most important factor in building it; a culture revolution is needed to break down barriers against trust building (Kumaraswamy et al. 2005). Studies in project alliance prove it to be a good start for initiating the trusting relationship as it provides better alignment of incentives and risks sharing compared to traditional or design-build contracts (Laan et al. 2011). A multi-cultural study including data on relational contracting from five different countries was also conducted (Rahman and Kumaraswamy 2012). In general, trust and trust-based operational arrangements were proven to offer the required stage for implementing relational based arrangements (Rahman and Kumaraswamy 2005; Rahman and Kumaraswamy 2008). Lazar (2000) used game theory to provide better understanding of the partnering relationships and the need to maintain a consistent cooperative relationship to develop and maintain trust. Trust and respect were added (among other factors) to the formula developed to calculate the key performance indicator for successful relational projects (Yeung et al. 2005). Trust was also studied by investigating its perceived meaning and behaviors that foster trust in ethical-partnering practices. (Wood et al. 2002).

Some studies compared the factors that attribute to the success of relational versus traditional projects (Lau and Rowlinson 2009; Doloi 2013). Trust, cost efficiency, and communication are key drivers for successful projects in both types of projects. However, traditional contracting was seen to lead to a lot of inefficiencies due to the contractual arrangements that define different processes (Doloi 2013). This was also emphasized by Soares (2012) stating that the current construction organizations hinder building trust due to the segregated nature of the work process.
Lau and Rowlinson (2009) study concluded that partnering projects participants does not necessarily exhibit more trust compared to non-partnering projects. Moral and social goals achieved by providing a socially safe working place were also seen to foster trusting relationships (Lau and Rowlinson 2009). Total quality management effect on success of partnering was also studied revealing trust as a factor fostering its application (Tang et. al 2009). Smith and Rybkowski (2012) questioned the role a chosen project delivery method (PDM) plays in trust between project parties, especially with development of integrated PDM, relational, and lean construction.

FINDINGS

Through the literature review conducted, six lines of research were identified; trust types, factors affecting trust development, trust and project success (improved team work and efficiencies), contracts, costs, and project delivery methods. Some significant observations were made through the identification. First, it is seen that most research in the area of trust in construction is geared towards the first three lines of research, in addition to relational contracting. It does not seem surprising to find that most studies heavily utilized surveys, case studies, and interviews to collect data about trust. As for the regions of the world where the research was conducted, most research was in Asian and European markets with fewer studies in North American construction market. Although project cost is a pivotal aspect in construction projects, only two studies were found that attempted to quantify the effect of trust on reducing project costs. With many authors suggesting having less adversarial and less detailed contracts, there is yet limited research conducted in the areas of contracts and trust. As pertains to project delivery methods, it becomes obvious that trust is mostly addressed in relational agreements such as partnering and alliancing. Thus, there exist a gap of knowledge in areas of non-relational project delivery methods, North American construction markets, costs, risk, and contracts, as related to trust.

CONCLUSIONS AND RECOMMENDATIONS

The aim of this paper is to identify the lines of research conducted in the area of trust in construction and identify the knowledge gaps. Through a literature review conducted on more than 50 peer-reviewed publications, it was seen that trust aspects in construction are gaining greater research attention as they are implicitly starting to change our contractual environment through less adversarial relationships. Researchers are increasingly seen to address trust in a more systematic manner, just as in other disciplines, in attempt to develop models that could be used to identify trust types, develop trust, measure, and maintain it in a construction project. Although it is observed that the trend of construction trust research is increasing, there still exists a crucial need to systematically introduce trust into our project management operations. The following recommendations for future research are thus suggested: 1) Develop measures to quantify and relate trust to project cost, 2) Determine the relationship between risk and trust in construction projects, 3) Determine how construction contracts can be drafted to best reflect the trust perception between the contracting parties, and 4) Compare trust levels in different project delivery methods (such as design-build, construction manager at risk and public-private-partnerships), whether from team’s perception or the contractual agreement perspective.
REFERENCES


