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A parallel multiple mediator model of knowledge sharing in architectural design project teams

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Abstract

The demystification of the underlying mechanism for architects' knowledge sharing behavior in a project team context is of importance to better appreciate the behavior in a theoretical sense and for effective managerial intervention in a practical sense. However, most studies of knowledge sharing mechanism in current literature focus on the simple mediation. The likelihood of multiple mediators for knowledge sharing is yet to be investigated. To bridge this gap, structural equation modeling is applied to test the parallel mediation of team-based self-esteem and team identification between two types of trust and knowledge sharing with survey data. It is found that the relation between affect-based trust and knowledge sharing is completely mediated by team-based self-esteem and team identification. The model implies that project managers should pay attention to the cultivation of members' team-based self-esteem and team identification. Special measures should also be taken to build and strengthen the affect-based trust.

Keywords: Trust; Team-based self-esteem; Team identification; Knowledge sharing

1. Introduction

Architectural design is a knowledge-intensive activity (Kale and Karaman, 2012; Lawson, 2005). There is a general consensus that an architect's way of knowing exists in perhaps the oldest recognized design profession (Lawson, 2004). For instance, Schon (1983) proposed the concept of reflection-in-action to explain how the design professionals acquire their professional knowledge in their practice. The situation is further complicated by the project-based nature of construction industry (Abdul-Rahman et al., 2012; Park et al., 2010). Project as a common organization of construction activities highlights its importance as a context to enable knowledge acquisition and knowledge sharing (Fewings, 2005). As architects build up knowledge of examples, images, understandings and actions through their project practice (Schon, 1983), their knowledge sharing behavior will significantly contribute to the performance of their future projects and offer competitive advantage (Ding et al., 2010; Issa and Haddad, 2008; Lin et al., 2011). However, an architect in Mainland China said, 'Several years ago architects focused on cooperation. However, due to the development of a market economy, competition has become more important nowadays.' (This citation comes from the conversation while the authors conduct exploratory investigation about architectural design project teams.) Both theoretical knowledge and professional experience are their competitive edges. Hence, to maintain their competitive edges, architects in project teams are not always willing to share their knowledge with others (Ding et al., 2007).

The dynamic and complex nature of design tasks and the specialized knowledge of team members in design projects make it difficult to control members' behavior, such as knowledge sharing. The demystification of the underlying mechanism for architects' knowledge sharing behavior in a project team context therefore is of importance for researchers to better appreciate the behavior in a theoretical sense and for effective managerial

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intervention in a practical sense (Fernie et al., 2003). However, most studies of underlying knowledge sharing mechanism in current literature focus on the simple mediation scenario (Ding, 2007; Taylor et al., 2008). Few empirical studies have investigated the multiple mediation model of knowledge sharing (KS) in a design project team environment. To bridge that research gap, this study investigates the parallel multiple mediator model of knowledge sharing in the context of Chinese architectural design project teams.

First, a review of knowledge sharing studies in the literature and mediation research is conducted to derive research hypotheses. Second, data collection and analysis for hypothesis testing in a multiple mediator model are demonstrated. Third, the results are interpreted and future research regarding multiple mediations is outlined.

2. Literature review

2.1. Trust and knowledge sharing in the literature

Interpersonal trust as a key construct has been investigated under various contexts in the management literature (Ding and Ng, 2010b). For example, Kadefors (2004) found that a higher level of trust relationship would enhance project team performance. In contrast, contractual incentives and close monitoring may induce opportunism and damage cooperative interactions. So trust matters in projects. Moreover, there are many different scales for measuring interpersonal trust (McAllister, 1995). Ding and Ng (2007) tested the reliability and validity of a Chinese version of McAllister's trust scale with a translation and back-translation method. This Chinese version of McAllister's trust scale has two dimensions i.e. cognition-based trust (CT) and affect-based trust (AT). Each dimension has five measurement items, i.e. CT with item CT1 to CT5, and AT with item AT1 to AT5 (Ding and Ng, 2007). Cognition-based trust refers to which trustors will trust each other in which respects and under what circumstances. Affect-based trust refers to the emotional bonds between trustors and trustees. This research employs the modified McAllister's trust scale because its reliability and validity have been established in the Chinese context. Moreover, this scale has also been used in previous knowledge-sharing related research (Chowdhury, 2005).

The relationship between trust and knowledge sharing has drawn researchers' attention in recent years (Koskinen et al., 2003). For instance, the role of trust as a mediator in knowledge sharing has been tested. By using interpersonal trust as a mediator, researchers found that personality factors such as agreeableness and propensity to trust can significantly influence knowledge sharing (Mooradian et al., 2006). In the same vein, Lin (2007) found that tacit knowledge sharing is also affected by distributive justice, instrumental ties, and expressive ties via trust between co-workers in an organizational context. Cheng et al. (2008) stated that the effects of some variables such as participation, communication, etc. on inter-organizational knowledge sharing are mediated by trust. In particular, the mediation role of trust in knowledge sharing in the context of construction industry is also verified (Ding, 2007).

However, little research has been done concerning whether there are mediators between trust and knowledge sharing. In particular, little research has been conducted to explore the likelihood of multiple mediators between trust and knowledge sharing in the construction industry. The multiple mediator research of knowledge sharing in the construction project context is important in three aspects. First, the complexity of relations between most variables suggests that a multiple mediator model may be a more reasonable approach to capture the underlying sophisticated mechanism than a single mediator model. In other words, an incorrect specification of the relationship by ignoring the possibility of multiple mediators may lead to bias and misleading conclusions (Preacher and Hayes, 2008a). Second, multiple mediator model enables pit competing theories against one another within a single model. Introducing more mediators allows researchers to determine the relative magnitudes of various mediating paths and to gain better understanding of the mechanism under scrutiny (Preacher and Hayes, 2008b). Last but not least, the multiple mediator model is the theoretical basis of many management intervention programs (MacKinnon, 2008). If the critical mediating paths are identified, intervention programs or policies which aim at behavior change can be improved by focusing on the most effective components and removing ineffective or even counterproductive programs or policies (MacKinnon, 2000). Therefore, the current multiple mediator model research bears both theoretical and practical significance.

2.2. Team identification and team-based self-esteem

Team identification (TI) is a specific type of social identification. Based on the social identity theory, Gundlach et al. (2006) define TI as the extent to which an individual team member identifies with a specific team. In other words, TI is an individual-level construct representing the degree to which team members perceive a sense of "oneness" with a particular team. Van Der Vegt et al. (2003) found that TI mediates the relationship between educational level dissimilarity and interdependence, as well as loyal behavior among team members in telecommunication companies. Therefore, TI is identified as a possible mediator for team-related research. However, few empirical studies have been done concerning the mediation role of TI with respect to knowledge sharing in the construction industry.

Ding et al. (2012) proposed the construct of team-based self-esteem (TBSE) as opposed to organization-based self-esteem. They defined TBSE as the evaluation of self-worth deriving from one's membership in a project team. This reflects the degree to which team members believe that they satisfy their needs by working together in a project team, and the value placed on membership in one's team. The validity of this construct has been verified. Moreover, the positive relationship between TBSE and knowledge sharing has also been confirmed in the studies by Ding et al. (2012).

However, little empirical research in the construction industry examines the possibility of a simultaneous mediation role for the two aforementioned constructs. In particular, architectural design projects in the industry are mostly organized as design teams.