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# To bridge or to bond? Diverse social connections in an IS project team

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**Abstract**

Although research has shown that knowledge sharing among project team members is crucial for project performance, achieving knowledge sharing is still challenging. This problem is especially salient in IS project teams. Such teams are temporary organizations that may not progress through the necessary team formation cycle, yet are expected to produce intangible outcomes in a limited time. In this paper, we investigate how bonding and bridging social capital influence knowledge sharing and project performance. Bonding could facilitate cohesiveness within a team and lead a team to achieve project goals. Bridging could facilitate access to various beneficial resources beyond the boundary of a project team, increasing creativity and innovation. However, bridging is costly and can obstruct project performance. Our findings suggest that team members with high bonding social capital are more likely to share their knowledge with their team. Bonding and intention to share knowledge also positively affect project performance. Conversely, bridging social capital can contribute to project performance only through the mediating effect of bonding. This research contributes to theory by empirically examining the two types of social capital and their interdependence, as predictors of knowledge sharing and subsequently project performance. Project managers should form teams composed of members with diverse social connections and consider the balance between bonding and bridging within a team to control the potential disadvantageous effects of bridging social capital.


*Keywords:* Social capital; Bonding; Bridging; IS project team; Knowledge sharing; Project performance

## 1. Introduction

As organizations increasingly rely on information systems (IS) for strategic and operational reasons, the role of IS has become essential in the business environment. Despite the importance of IS, industry reports put the failure rate of IS projects at close to 70%. Twenty-six percent of IS projects have been cancelled or abandoned and forty-six percent of projects experienced cost and time overrun (The Standish Group, 2009). These projects' failures often lead to wasted resources, missed business opportunities, and may damage companies' reputation and profits (Chang and Wong, 2008). The reasons for the failure of IS projects vary from the complexity of the technology involved (Smith, 2002), changing user requirements (Cerpa and Verner, 2009; Smith, 2002), to high uncertainty (White, 2006).

In addition, unlike construction or engineering, IS projects produce intangible outcomes and entail knowledge-intensive work requiring diverse expertise such as business knowledge and process as well as emerging IT techniques or skills (Lientz et al., 1999; Pee et al., 2010). Although knowledge sharing (KS) is touted as a critical factor to the success of IS projects, encouraging KS is still problematic as professionals are reluctant to share their knowledge and expertise (van den Hooff and Ridder, 2004; Yu, et al., 2010). The reluctance to share knowledge is intensified by the temporary nature of most IS project teams. Furthermore, IS projects involve various stakeholders such as business analysts, system designers, hardware designers, programmers, and IT consultants. Each of these stakeholders has a different background and a different view of the project. Thus, IS projects require substantial teamwork and collaboration among team members that often depend on internal and external social relations.

Prior research in construction (Bresnen et al., 2003; Di Vincenzo and Mascia, 2012), regional strategic networks

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(Eklinder-Frick et al., 2011), film-making and media (DeFillippi and Arthur, 1998), and IS projects (Hatzakis et al., 2005; Newell et al., 2004) suggests that social capital (SoC) among project members can improve project performance. Yet, to the best of our knowledge, no prior work has measured the relationships between bonding (internal SoC), bridging (external SoC), knowledge sharing and project performance in the context of IS or elsewhere.

The goal of this study is to understand and validate the influence of bonding and bridging SoC on the underlying process affecting KS, and subsequently perceived project performance. We use data collected from individuals involved in IS projects for the following reasons: (1) the high number of failed IS projects renders them an interesting case, (2) we believe that IT services is a prime example of a project-based industry in which new system development involves not only non-routine processes, but also complex inter-professional and inter-organizational contractual and working relationships, and (3) the transitory, short-term nature of IS project teams augment the interplay between bonding and bridging.

This paper is organized as follows. In the next section, we introduce the theoretical foundations of our research. The following section describes the research model and hypotheses. In section four, we describe the research methodology. Section five presents the analysis and results. Several limitations and implications of the study and future research directions are discussed in section six.

## 2. Theoretical background

### 2.1. Social capital in project environment

Adler and Kwon (2002) proposed a conceptual framework that integrates various streams of SoC research and defines SoC as "the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations" (Adler and Kwon, 2002, p 23). The concept of "social capital" has been investigated as an increasingly essential factor of group formation (Huysman and Wulf, 2004; Oh et al., 2004; Reagans et al., 2004). High levels of SoC also increase group cohesiveness, eventually supporting collective behavior (Adler and Kwon, 2002; van den Hooff and Ridder, 2004). As discussed above, a project often requires diverse knowledge and innovative ideas beyond the boundaries of a given team. The need for external information requires interaction with external entities (e.g., other teams within the project, consultants, vendors). Although a number of studies have examined the effect of SoC on team formation (e.g., van den Hooff and Ridder, 2004; Wasko and Faraj, 2005), only a couple of case studies have analyzed the two types of SoC simultaneously (Newell et al., 2004; Tansley and Newell, 2007). Some studies have focused on "bonding SoC" which is formed through interactions within a collectivity (i.e., within a team). However, these studies ignored the need for external interaction (Rico et al., 2009; Robert et al., 2008; Sherif et al., 2006; Yu et al., 2010). Similarly, a number of studies have addressed external SoC in inter-organizational context (Yli-Renko et al., 2001), business units (Hansen, 1999; Tsai, 2001) and IS projects (Chang and Wong, 2008). For example, a team member with friends or advisers outside the team can access resources to solve a project problem based on these external interactions. SoC formed through external ties, is defined as "bridging SoC." However, the above studies did not consider the need for internal interaction (Chang and Wong, 2008; Hansen, 1999; Tsai, 2001; Yli-Renko et al., 2001). We contend that both bonding (internal) and bridging (external) SoC could affect team performance.

Nonetheless, bridging SoC poses risks and challenges to projects. Frequent external interactions require time and efforts (Adler and Kwon, 2002; Balkundi and Harrison, 2006). Strong external ties may also provide team members with the opportunity to move to another job or company before completing the project (Seibert et al., 2001; Yang et al., 2009). Thus, under some conditions bridging SoC may detract from project performance. Newell et al. (2004) and Tansley and Newell's (2007) case studies emphasized the importance of external and internal ties in the context of IS projects. However, to date, none of the above studies have measured and empirically validated the interaction between bonding and bridging SoC and their effect on knowledge sharing and project performance.

### 2.2. Project performance

Project success is determined by assessing whether the overall objectives of a project are met. Project success is measured by evaluating whether the project has added business value and often includes project management success (Carroll and Fidock, 2008). Project management success is determined by measuring performance against cost, schedule, and quality (Cooke-Davies, 2002; Thomas and Fernandez, 2008). In this paper, we focus on project management success rather than project success. The study deals with individual project teams within a project and thus cannot measure the overall success of the project (i.e., the implementation of an organizational strategy or business value). The Project Management Body of Knowledge (PMBOK) defines project management success as the improvement of project performance (e.g., "on time, in budget, and to scope") (PMI, 2004). Conventional indicators of project performance are measured in terms of cost, time and scope (Pinto and Slevin, 1988). Project performance can also be assessed by measuring team members' perceptions of whether a project has met its goals in terms of schedule, efforts, and quality (Faraj and Sproull, 2000; Liang et al., 2012). In this paper, we use project management success and project performance interchangeably following prior research in similar context (e.g., Faraj and Sproull, 2000; Liang et al., 2012).

Knowledge management cycle focuses on knowledge flow, the process of creating internal knowledge, acquiring external knowledge, and storing, updating and sharing knowledge internally and externally (Alavi and Leidner, 2001). KS refers to supplying task information and expertise to help and cooperate with others to solve issues or develop new ideas (Wang and Noe, 2010). SoC theory has been used to explain various pro-social behavior such as collective actions and community involvement (Hooff et al., 2004; Wasko and Faraj,