Chapter XVIII

Applying Social Network Theory to the Effects of Information Technology Implementation

Qun Wu
University of Arkansas-Little Rock, USA

Jiming Wu
California State University, East Bay, USA

Juan Ling
Georgia College & State University, USA

ABSTRACT

While some studies have found a significant link between information technology (IT) and firm performance, others have observed negative or zero returns on IT investments. One explanation for the mixed findings is that the causal link from IT to firm performance may be mediated. However, previous information system (IS) research has paid relatively little attention to such mediators. In this chapter, we develop a conceptual framework in which social network plays a mediating role in the relationship between IT usage and firm performance. Specifically, IT usage helps organizations strengthen inter- and intra-organizational networks, which, in turn, enhance firm performance.

INTRODUCTION

Today, many organizations are leveraging information technology (IT) to develop innovative products and/or create new business models for generating revenues and engaging consumers. Consequently, strategic use of IT has been viewed as a key driver of organizational success in an increasingly dynamic business environment. Given the great importance of IT, a large body of research has been dedicated to the relationship between IT usage and firm performance. For example, Bharadwaj (2000) argues that IT can be conceptualized as an organizational capability and empirically examines the association between that capability and firm performance. Hitt and Brynjolfsson (1996) suggest that empirical results on IT value may depend heavily on what research questions are being addressed and what data are being used. Drawing on economic theory, they investigate the link between IT spending and business value in terms of productivity, profitability, and consumer value.

While some studies have found a significant link between IT and firm performance, others have observed negative or zero returns on IT investments (Dehning & Richardson, 2002). One explanation for the mixed findings is that the causal link from IT to firm performance is too long and that many studies have ignored key organizational competences that mediate the relationship between IT and firm performance (Tanriverdi, 2005). This chapter proposes a theoretical approach to the exploration of the underlying mechanism through which IT contributes to business success. Specifically, this study is based on social network perspective and delineates the mediating role of such networks in the relationship between IT usage and firm performance.

BACKGROUND

The origin of social network theory can be traced back to the late 1800s. Tönnies (2001) argues that individuals who share values and beliefs are linked by social ties. Durkheim (1997, 1982) models the modern society as "organic solidarity", which emphasizes the role of cooperation between differentiated individuals with independent roles.

In 1900s, the further development of social network analysis has rested on three cornerstones. The first one is sociometric analysis developed by researchers working on small groups with techniques of graph theory. One of the distinguished achievements in the sociometric analysis is made by Moreno (1934), who pioneers the systematic recording and analysis of social interaction in small groups, especially in classrooms and work groups. The second one is the investigation of interpersonal relations conducted by the Harvard researchers in 1930s. One such investigation is known as Hawthorne Studies led by Warner and Mayo. The third one is the examination of community relations in tribal and village societies by the Manchester anthropologist. Gluckman, a central figure at Manchester, makes great contribution to the development of structural approach during his investigation of community networks in southern Africa. In 1960s and 1970s, the three strands of research have been brought together and the contemporary social network analysis has emerged (see Scott, 2000 and Freeman, 2004 for the history of social network analysis).

Social networks have become one of the hot research areas in recent years. The network research has boomed in management as well as in other disciplines (Borgatti & Foster, 2003). A social network is comprised of nodes and ties. Nodes are actors (i.e., individuals, groups, and organizations) in the network, while ties are the relationships between the actors. Social network theory[1] suggests that social networks actors are embedded within ties, which facilitate or hinder their actions and performance.

The literature in management provides consistent evidence of the influence of social networks on performance at different levels. Focusing on the link between micro-level networks and performance, researchers observe that employ-

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