

THE EFFECTS OF COMMUNICATION, ADVICE, AND TRANSACTIVE MEMORY NETWORKS ON ORGANIZATIONAL LEARNING

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Dissertation Proposal Abstract

Over a half-century of organizational learning research has found that organizations, much like individuals, “learn” new behaviors affecting their performance. The learning paradigm is an important way of thinking about organizational performance because it represents a dynamic picture of productivity rather than an outcome at one point in time. Although the fact that organizations learn is now well-documented in the research literature, the reasons *why* and *how* learning actually occurs are less well understood. This has prompted many researchers to look “behind the learning curve” for factors contributing to variation in learning rates across different organizations and at different levels of analysis.

Since organizational learning is inherently dynamic and social in nature, one area that promises to shed additional light on the reasons for underlying differences in learning across organizations lies in the network of social relationships and knowledge distributions in work groups. Discovering how these networks affect the way groups use experience to improve performance will add important insight into how organizations actually adapt and learn from their collective experience. While modest progress has been made in associating such network structures with group productivity, the interactions of networks and their correlations to longitudinal measures of performance such as organizational learning remain largely unexplored. In this dissertation, these issues are addressed through an empirical and computational examination of the relationships between network characteristics and organizational learning at the work group level.

The primary motivation for this analysis is to understand the interactive effects of social and knowledge networks on a group’s ability to learn from experience. The focal level is the work group – i.e., teams embedded in larger organizations and operating as continuing work units responsible for the production of goods and services. The rationale behind this focus is two-fold. First, work groups are the dominant sub-unit in organizations, and the vast majority of workers are expected to be on some form of work team by 2006. Second, organizational learning occurs over time and thus can lead to a better understanding of the relationship between human resource characteristics and business outcomes. Other forms of teams such as project teams, ad hoc teams, and concurrent engineering teams may not have enough longevity to provide an empirical basis for analysis of experience-based learning and transactive memory.

The incorporation of networks is predicated on Cyert and March's (1992) suggestion that organizations may be able to enhance their productivity by shaping informal network characteristics within work teams in ways that positively affect organizational learning. Moreover, individuals' contributions to work team performance have been shown to depend on the nature of a group's knowledge networks.

The second motivation for this work is to extend research on organizational learning, social networks, and transactive memory. Understanding how social and knowledge networks are linked to organizational learning will increase the understanding of the potential sources of variation in learning rates across teams and firms. Social network theory will be broadened by helping to explain, through examination of impacts on organizational learning, how dynamic network attributes contribute to performance and to the social and knowledge capital of firms. Transactive memory theory will be extended by exploring how this memory is structured at the work group level and how those structural attributes could lead to other organizational phenomena such as communities of practice and structural holes. Finally, the use of conventional empirical techniques combined with new network measures and multi-agent simulations will help advance the integration of computer science applications used in the social and behavioral sciences.

This dissertation builds on organizational learning and social network perspectives to motivate hypotheses of curvilinear relationships between the structural characteristics of communication and advice networks and organizational learning. In addition, this research introduces the concept of transactive memory *networks* and uses new measures to examine similar hypotheses of curvilinear effects on organizational learning.

Methodologically, the study is novel in its combination of empirical and computational techniques. Empirical data will be obtained from a cross-section of approximately 120 work groups in several divisions of five large, vertically integrated organizations engaged in the production and distribution of electricity. Data collection began in December, 2004 and is expected to continue until August, 2006. The types of work teams included in the study encompass operations, maintenance, material handling, supply chain maintenance, installation services, and customer support services. Printed surveys of knowledge, social, and transactive memory networks will be administered to all participants on-site during work hours. The surveys also include additional controls for interdependence and demographic characteristics. Since reliable archival data on performance across teams is available only on certain teams, both team members and work group managers will be surveyed to assess group-level performance. Where feasible, member and manager-rated performance will be validated with available archival data. Using the empirical data as a foundation, multi-agent simulations will be executed for each work team to produce longitudinal data for analysis in a canonical learning curve framework. Each set of work team simulations will produce communication, advice, and transactive memory networks along with team productivity results for 500 time periods. Hypotheses will then be evaluated based on adding relevant independent and interactive variables to stepwise regressions of the canonical learning curve model.

From a practical standpoint, results are expected to lead to an improved understanding of how to leverage informal network characteristics in ways that sustain high performance of work teams. Understanding how transactive memory networks are structured in high performing teams, for example, may contribute to development of mechanisms enabling the deliberate expansion of absorptive capacity at the group level, leading to greater innovation. In addition, understanding the structure of transactive memory may help organizations reduce the effects of non-systematic turnover on performance by fostering networks that lower the effects of losing any particular member at random. Even systematic loss of knowledge due to factors such as age-related retirement may be reduced by the tendency of new (replacement) members to benefit from the transactive memory resident in the departing members' work groups.