

## Abstract

Managing knowledge is key to sustaining competitive advantage, especially in knowledge intensive industries like that of software development. Such a realization has led software development organizations in India to invest considerable resources towards knowledge management initiatives. However, an earlier empirical study conducted by the researcher found that such initiatives do not seem to have matured enough for the benefits to be tangibly experienced by either the organizations or their employees. While organizational knowledge management initiatives are focused on managing explicit knowledge, knowledge in the context of software development is predominantly complex and rich in tacit content and hence not readily amenable to externalization. Thus software professionals prefer to share knowledge mostly by means of informal and unstructured processes of socialization.

Globally, empirical research on knowledge management has mostly dealt with inter-unit or inter-organizational knowledge transfer in the context of product innovation or replication of best practices. However, given the nature of software development, which lacks a strict division of labour and where team members are involved in collaborative problem solving, *within-team* knowledge sharing is critical for team effectiveness. Such *within-team* knowledge sharing is largely determined by team dynamics and team member traits rather than by knowledge management initiatives undertaken at an organizational level. This research is an empirical investigation of the various factors that are likely to influence how members in a software development team learn from one another and share one another's knowledge. It also investigates whether high knowledge sharing influences the effectiveness of software development teams.

A series of hypotheses regarding the impact of team member traits, team dynamics and organizational context on knowledge sharing *among* team members was developed. Data was collected through questionnaire survey from about 600 software professionals working in 20 software development organizations. This data was analyzed and a model was fitted using the technique of structured equation modeling. The two central

hypotheses regarding the criticality of knowledge sharing for the effectiveness of software development and the dominance of team and individual level variables over organizational variables in determining knowledge sharing were validated. On further analysis, the best-fit model was achieved with teams involved in product development, underlying the greater importance of learning and knowledge sharing for teams involved in knowledge creation and exploration, as compared to those involved in knowledge exploitation or application.

This investigation, on one hand, leads to a better understanding of the phenomenon of knowledge sharing in the context of software development. On the other hand, it addresses a gap within the domain of knowledge management where researchers have, till date, rarely investigated how knowledge is created and shared *among* team members engaged in a highly interdependent and cognitively intense problem solving activity.