Building Shared Mental Models in Global Virtual Teams: An IT Capabilities’ Perspective

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Background:

Shared mental models (SMMs) are defined as “mechanisms whereby humans are able to generate descriptions of system purpose and form, explanations of system functioning and observed system states, and predictions (or expectations) of future system states” (W.B. Rouse & N.M. Morris, 1986, p.360). This hypothetical construct was utilized by Klimoski and Mohammed (1994) to account for team performance differences. This cognitive view of team performance contends that team performance will be enhanced to the extent that team members hold accurate shared or common mental models of the task, team equipment and situation (Rouse, Cannon-Bowers, & Salas, 1992).

Previous SMMs studies were mostly conducted in the context of traditional face-to-face teams. However, as a result of globalization, global virtual teams are increasingly being adopted by organizations. Kristof et al. (1995) define a global virtual team as a work group that is temporary, culturally diverse, geographically dispersed, and use ICT (information and communication technologies) for communication (Jarvenpaa & Leidner, 1999; Maznevski & Chudoba, 2000; Powell, Piccoli, & Ives, 2004). Shared mental model could play a significant role in enhancing global virtual team effectiveness and performance particularly when time and circumstances do not permit lengthy communication and strategizing among team members (Marks, Zaccaro, & Mathieu, 2000; Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000). In addition, trust is a major challenge for global virtual teams (Handy, 1995). Further, it is our belief that building of shared mental models in global virtual teams can engender mutual trust between global virtual team members.

Research Problem

Interventions such as leader briefings (Marks et al., 2000) and team-focused trainings (Arrow & McGrath, 1995), simulation-based trainings (Mathieu, Heffner, Goodwin, Cannon-Bowers, & Salas, 2005) have been useful for building SMMs in face-to-face teams. However, implementing these interventions for global virtual teams is expected to be less effective because of the short-lived nature of virtual teams. In contrast with face-to-face teams, global virtual teams are highly dependent on ICT for developing trust and a rhythm of interaction. Therefore, we would like to explore the following research question: how do IT capabilities influence the building of shared mental models in the global virtual teams?

Research Model:
The above process model presents our conception of the relationships between shared mental models, team processes, and IT capabilities. Four exogenous factors—time, environmental exposures, affectivity, and knowledge exchange—influencing the building of shared mental models in global virtual teams were identified based on literature review.

We adopt an emergent perspective in our research model with the global virtual team’s SMM as its central tenet (Markus & Robey, 1988). This approach is based on the notion of socio-technical systems wherein the interaction between IT capabilities and the other factors impacts virtual team process and performance (Markus & Robey, 1988). Unlike traditional face-to-face teams, virtual teams do not start with SMMs relating to the task, technology, team interaction or the team itself (Espinosa et al., 2001). This is because virtual teams are formed for a specific purpose and are disbanded soon after the project is completed. Thus the exogenous factors such as time, environmental exposures, affectivity, and knowledge exchange are critical in the development of these SMMs. As the virtual team members interact with each other, their task and IT capabilities, the SMMs are modified and either converge (or are similar) or further diverge. Whether the virtual team is in its initial stages or has matured, team processes are impacted by the nature of the SMMs and the use of IT capabilities. Furthermore, the greater the degree of convergence of the mental models associated with a virtual team, the likelier that team processes will be active and effective (Mathieu et al., 2000). This in turn will impact virtual team performance. It is to be noted that these relationships are true for traditional teams too; our study extends them to virtual teams.

**Propositions:** Based on the previous discussion, this section outlines some propositions based on our research model.

P1: Time, environmental exposures, affectivity, and knowledge exchange are four exogenous factors that influence the building of SMMs in global virtual teams.

P2: Shared mental models positively correlate to team processes.

P3: Shared mental models’ quality (convergence and accuracy) is likely to be enhanced during the team processes.

P4: Shared mental models influence the use of IT capabilities.

P5: Appropriate use of IT capabilities will positively correlate to shared mental models’ similarity and accuracy.

P6: Appropriate use of IT capabilities can facilitate team processes.

P7: Appropriate use of IT capabilities can help relieve the effect of exogenous factors on the building of SMMs in global virtual teams.

**Conclusion:**

In this paper, for the purpose of enhancing shared mental models in global virtual teams, we presented a process model of analyzing the relationship between SMMs in global virtual teams, team processes, and IT capabilities. Four exogenous factors that influence the building of SMMs in global virtual teams were identified. As to the role of IT in the process of building SMMs, we claimed that IT is a necessary but not sufficient part to the building of high-quality shared mental models in global virtual teams. Higher-quality SMMs is more likely to be obtained in situations when IT can relieve the effect of exogenous factors and facilitate the team processes. The next step of our research is to conduct empirical studies based on this research model either using qualitative methods or quantitative methods or both. The challenging issues we face are task design, construct measurement, and introduction to IT intervention.

**Selected References**


