Systems Development by Virtual Project Teams: A Comparative Study of Four Cases

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EXECUTIVE SUMMARY

Business organizations and global partners are increasing their utilization of virtual project teams to enhance competitive advantages in the global market. More than ever, organizations are using virtual teamwork to bridge time zones and geographic distances. The use of virtual work environments has spurred interest in understanding how team members interact and collaborate over the life of a project. Not surprisingly, organizations are trying to understand what factors are determinants of success with respect to virtual teams. Increasing network bandwidth, continuously improving communication technologies, shifting global economies, and changes in social practices have caused business managers to reconsider traditional practices. This paper provides a comparative case study of four cross-cultural virtual project teams as they analyze, design, and develop information systems.

BACKGROUND

Teams are an integral part of organizational life (Gersick, 1988). Recent trends in globalization and advances in telecommunications technologies have enabled the use of distributed teams, especially those involved in Information Systems Development (ISD). These "virtual teams" consist of geographically dispersed team-members who interact using

information and communication technologies (ICTs) such as email, groupware, video, and computer-based conferencing systems. Briggs, Nunamaker, and Sprague (1998) have observed that while the demand for virtual teams grow, "little is known on how to actually conduct team telework" (p. 11). This case study provides some insights into virtual teamwork, specifically in the context of ISD.

Virtual Project Teams

Work teams described in this comparative case study were asked to identify the business problem associated with their project, develop a plan for addressing the problem using an information system to enable the solution, analyze design alternatives, define system requirements, and develop a working solution to address the business problem. Four project teams were observed as they worked to identify, initiate, plan, design, develop and implement information systems using formal system development methodologies. Project teams included some members that were co-located and some members that lived and worked halfway across the globe.

Teams coordinated their efforts in a virtual environment using WebCT™ a product designed to provide support for virtual collaborative computing environments by enabling synchronous and asynchronous communication between local and remote users. WebCT™ includes mechanisms for online discussion forums, synchronous chat, file transfer, and shared calendaring. The application was the primary tool used to support the communication, collaboration, and coordination among team members in each virtual team. Each team was given training to familiarize team members with tool specific functions. Project team members were experienced information technology users and proved quite proficient in their use of the tools. Individual team members posted discussion topics to a local team folder or to a global area accessible to the entire team. Discussion pages provided an environment for team members to read and reply to discussion topics asynchronously. Chat sessions provided *synchronous* communication in which multiple participants exchanged thoughts using typed dialog. Participants in chat sessions could view messages sent by other participants in "real-time." With file sharing, team members posted project documents to a shared space. Documents placed in the common project directory were reviewed, updated, and re-posted as necessary. The calendar tool gave teams the ability to schedule events to a master team calendar for all members to see. Facilitators observed development efforts, provided guidance and arbitrated team conflicts. Table 1 shows the extent to which each team used the tools available in WebCT™ over the period of the projects. Team A held the most chat sessions (16), Team B scheduled far more events than other groups (26), Team C had a greater propensity for sharing files (68), and all of the groups contributed several discussion messages.

Table 1. Use of WebCT™ Tools in Virtual Teams

Team	Chat Sessions	Calendar Events	Files Shared	Discussion Messages
A	16	1	29	184
B	10	26	38	308
C	11	9	68	318
D	13	8	33	366

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