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Managing Flexibility in Distributed Information Systems Architectures

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MANAGING FLEXIBILITY IN DISTRIBUTED INFORMATION SYSTEMS ARCHITECTURES

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Abstract

Competitive pressures are forcing organizations to be agile and flexible. Response to changing environmental conditions is an important factor in determining corporate performance. Organizational flexibility is in turn closely related to the management of information systems. Flexibility of information systems needs to be actively managed. Information systems in organizations have evolved from being a function of a centralized MIS department to a function dependent on a distributed collection of information systems resources (hardware, software, and people). This distributed collection of resources has been referred to as the Distributed Information Systems Architecture. Managing flexibility in distributed information systems architectures is an interesting and challenging problem.

The importance of flexibility both at the organizational and information systems levels has been recognized by research in management (Bahrami 1992), operations management (Sethi 1990), and MIS (Lacity, Willcocks and Feeny 1995). However, flexibility in distributed information system architectures has not been examined in detail. Flexibility in distributed information system architectures can be of several types. Each type of flexibility has distinct characteristics. Understanding different types of flexibility in the context of distributed information system architectures is therefore extremely important.

The operations management literature on flexibility is used as a starting point to categorize various types of flexibility. Analysis of secondary data using grounded theory (Strauss and Corbin 1990) is employed to identify several different types of flexibility. Secondary data used consists of articles on outsourcing and management of information systems from academic publications as well as from practitioner publications such as *Datamation, Information Week,* etc. A taxonomy for understanding flexibility in distributed information system architectures is developed.

The relationship between various types of flexibility and different information systems functions is explored. This taxonomy of flexibility, as well as the relationship between types of flexibility, information system functions, and resource requirements has important implications for evaluation of outsourcing decisions.

REFERENCES

Bahrami, H. "The Emerging Flexible Organization: Perspectives from Silicon Valley." *California Management Review,* Summer 1992, pp. 34-51.

Lacity, M. C.; Willcocks, L. P.; and Feeny, D. F. "IT Outsourcing: Maximize Flexibility and Control." *Harvard Business Review,* May-June 1995, pp. 83-93.

Sethi, S. K., and Sethi, S. P. "Flexibility in Manufacturing: A Survey." *International Journal of Flexible Manufacturing Systems,* Volume 2, 1990, pp. 289-328.

Strauss, A., and Corbin, J. *Basics of Qualitative Research: Grounded Theory, Procedures and Techniques.* Newbury Park, California: Sage Publications, 1990.

AN INVESTIGATION OF GROUP DEVELOPMENT PROCESS IN "VIRTUAL" PROJECT TEAM ENVIRONMENTS

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Abstract

In this field study, the group development process in a "virtual" project team environment characterized by distributed team members working across time and/or geography for the duration of the project in a non-face-to-face model was investigated. The primary research question was, "How do groups develop in virtual project team environments and what role does groupware technology play in that development process?" To answer this question, the following propositions were advanced based on a literature review on group development and communication media research.

P1. In virtual team environments, groups will show much more complex group development paths than under face-to-face environments.

P2. In virtual team environments, production function will be dominant, while there will be a lower level of well-being and member support functions.
Corollary: Groupware that supports virtual teams will be dominantly used to achieve production function.

P3. In virtual team environments, groups that maintain balance among three functions — production, well-being, and member-support — will outperform other groups and perceive their interactions more positively.

The research methodology was a field study with a content analysis of electronic transcripts of group interactions via LotusNotes, a groupware for asynchronous communication. Twelve four-person teams of MBA students from two major state universities located in the mid-Atlantic and the Southwest regions of the United States participated in this study. Participation in the study was a component of a Business Process Reengineering course, each team consisted of two students from each of the universities. Student teams were asked to analyze a Harvard Business School case and respond to three specific questions. Total duration of the project was four weeks. At the end of the fourth week, each virtual team prepared a final report and submitted it to their local instructor.

Three different measurement approaches were taken in this study. First, the number of production oriented interactions, well-being oriented interactions, and member-support oriented interactions among team members were measured and then mapped into a group developmental path diagram as suggested by McGrath (1991). This content analysis allowed us to see whether there were consistent patterns emerging from a number of different virtual project teams. Second, the students' perceptions of the technology environment were measured using the role classification for group support systems (Zigurs and Kozar 1994) to ask about the role that technology played in their project. The perceived quality of group interaction was also measured by ten items derived from Green and Taber (1980). Finally, the team performance was measured using the project scores, which were blindly scored by one instructor.

Currently, all the project reports have been graded. All the electronic transcripts have been printed out and are currently being coded. The result of the content analysis will be available at the presentation.

REFERENCES

Green, G. S., and Taber, T. D. "The Effects of Three Social Decision Schemes on Decision Group Process." *Organizational Behavior and Human Performance*, Volume 25, 1980, pp. 97-106.

McGrath, J. E. "Time, Interaction, and Performance (TIP): A Theory of Groups." *Small Group Research*, Volume 22, Number 2, 1991, pp. 147-174.

Zigurs, I., and Kozar, K. "An Exploratory Study of Roles in Computer-Supported Groups." *MIS Quarterly*, Volume 18, Number 3, 1994, pp. 277-297.