8-25-1995

Use of Groupware: A Test of Three Theoretical Perspectives

Hao Lou
Ohio University

Richard W. Scamell
University of Houston

Use of Groupware:
A Test of Three Theoretical Perspectives

Hao Lou
College of Business
Ohio University

Richard W. Scamell
Colelge of Business Administration
University of Houston

Abstract

It has become fashionable in business to talk about the flattening of organizational hierarchies, the importance of teamwork to meet overall organizational goals, and the need to capture and manage an organization's "knowledge base" to achieve and sustain competitive advantage. Such discussion has driven the software industry to focus attention on software specifically designed to support the team approach essential to most service and customer oriented organizations.

Known as groupware, such software products enable teams of people to integrate their knowledge, work processes and applications to achieve improved business effectiveness. While groupware products are proliferating and fueling speculations about their potential to enhance organizational effectiveness (Johansen et al., 1991), it has been suggested that the implementation of such technologies is more difficult and yields more unintended consequences than is typically acknowledged (Bullen and Bennett, 1990; Grudin, 1990; Kling, 1991; Orlikowski, 1992). If indeed groupware is to offer what it has promised, then studying the use of groupware in the work place should be valuable for understanding how such technology is used, if it is used at all, and how its use is affecting productivity in today's organizations.

This study concerns the use of groupware in organizational settings. The questions of whether groupware products are being used in organizations and how they are being used in organizations that have implemented this type of technology are important for three reasons (Markus et al., 1992). First, how such technologies are used is believed to condition their effects. Second, how these technologies are likely to be used when alternative tools co-exist can not be easily predicted from technological characteristics. Third, because people use groupware with other people, one person's choices about how to use groupware may have consequences for other group members.

This study consists of an electronic survey of the use of a particular groupware product, Lotus Notes, in three Fortune 500 companies. It builds on the work of Rice and Shook (1988), Rice et al. (1989), Rice et al. (1990), and Markus et al. (1992) by combining three

theoretical perspectives related to the use of new communication technologies: the theory of media richness (Daft and Lengel, 1984 and 1986; Trevino et al., 1987 and 1990), the theory of social influence (Fulk et al., 1987 and 1990), and the theory of critical mass (Markus, 1987 and 1990). These three theoretical perspectives are combined to develop a research model that reflects a pluralistic view of new communication technology use behavior and permits the investigation of the research question: what factors, suggested by the theories of media richness, social influence, and critical mass, best explain organizational members' use of groupware.

The results are mixed for the research question. Only social influence has a significant, although quite moderate, positive relationship with use. On the other hand, media richness explains little of an individual's media use behavior. Contrary to the prediction made by media richness theory, task analyzability has no relationship with selfreported use and exhibits a negative relationship with computer monitored use. In addition, critical mass, while intuitively appealing, fails to explain actual use behavior.

Implications for theory and research suggest that (1) new media perceptions and use depend on factors in addition to those contained in the richness scale and (2) the theories of social influence and critical mass, while promising in providing explanatory power for new media use, both need additional work in order to conceptualize relevant variables and operationalize their measurement.

It was the contention of this study that no single theory is capable of explaining all differences in individuals' use of groupware. A wide array of factors co-exist in affecting individuals' preferences and use of groupware. The relationship appears more complicated than any theory would suggest. As Panko (1992) contends, while there is ample evidence that the existence of many correspondents affects groupware adoption, empirical studies have consistently shown that many other things correlate with use. Panko further suggests that when we study groupware use, we need to develop explanations that take in a host of task, implementation, social influence, and other factors. The present study represents a first step in this direction.

References

Bullen, C.V. and J.L. Bennett. (1990). "Groupware in Practice: An Interpretation of Work Experience," **MIT CISR Working Paper No. 205**.

Daft, R.L., and R.H. Lengel. (1984). "Information Richness: A New Approach to Managerial Behavior and Organizational Design," In L. L. Commings and B. M. Staw (Eds.), **Research in Organizational Behavior**. 6:191-233. Homewood, IL: JAI Press.

Daft, R.L., and R.H. Lengel. (1986). "Organizational Information Requirements, Media Richness and Structural Design," **Management Science**. 32(5): 554-571.

Fulk, J., C.W. Steinfield, J. Schmitz, and J.G. Power. (1987). "A Social Information Processing Model of Media Use in Organizations," **Communication Research**, 14(5): 529-552.

Fulk, J., J. Schmitz, and C.W. Steinfield. (1990). "A Social Influence Model of Technology Use," In J. Fulk and C. Steinfield (Eds.) **Organizations and Communication Technology**. pp.117-140. Newbury Park, California: Sage Publications.

Grudin, J. (1990). "Why CSCW Applications Fail: Problems in the Design and Evaluation of Organizational Interfaces," **Proceedings of the ACM Conference on Computer-Supported Cooperative Work**. pp. 85-92.

Markus, L.M., (1987). "Toward a 'Critical Mass' Theory of Interactive Media: Universal Access, Interdependence and Diffusion," **Communication Research**. 14(5): 491-511.

Markus, M.L. (1990). "Toward a 'Critical Mass' Theory of Interactive Media," In J. Fulk and C. Steinfield (Eds.) **Organizations and Communication Technology**. pp.194-218. Newbury Park, California: Sage Publications.

Markus, M.L., T.K. Bikson, M. El-Shinnawy, and L.L. Soe. (1992). "Fragments of Your Communication: EMail, VMail, and Fax." The **Information Society**, Vol. 8, pp. 207-266.

Orlikowski, W. (1992). "Learning form Notes: Organizational Issues in Groupware Implementation." **CSCW '92 Proceedings** .

Panko, R. (1992). "Stunted Use of Electronic Mail," Working Paper. College of Business Administration, University of Hawaii.

Rice, R.E., A. Grant, J. Schmitz, and J. Torobin. (1990). "Individual and Network Influences on the Adoption and Perceived Outcomes of Electronic Messaging," **Social Networks**. 12(1): 27-55.

Rice, R.E., D. Hughes, and G. Love (1989). "Usage and Outcomes of Electronic Messaging at an R&D Organization: Situational Constraints, Job Level, and Media Awareness," **Office: Technology and People**. 5(2):141-161.

Rice, R.E. and D. Shook, (1988). ""Access to, Usage of, and Outcomes from an Electronic Messaging system," **ACM Transaction on Office Information Systems**. 6(3): 255-276.

Trevino. L.K., R.L. Daft, and R.H. Lengel. (1987). "Media Symbolism, Media Richness, and Media Choice in Organizations: A Symbolic Interactionist Perspective," **Communication Research**. 14(5): 553-574.

Trevino, L.K., R.L. Daft, and R.H. Lengel. (1990). "Understanding Managers' Media Choices: A Symbolic Interactionist Perspective," In J. Fulk and C. Steinfield (Eds.) **Organizations and Communication Technology**. pp.71-94. Newbury Park, California: Sage Publications.