A substantial body of management literature supports the general finding that managers and professionals, who make up about 70% of the office workforce, spend well over half of their work day in communication-related activities (Mintzberg, 1973; Rice and Bair, 1984; Panko, 1989). In fact, management communication is the largest single cost factor for U.S. business today (Strassman, 1985; Panko, 1992). Since the managerial and professional labor force represents the greatest portion of costs for labor and these people spend the bulk of their time communicating, improvements in the communication process should be of great interest to organizations.

The importance of communication has been intensified by the recent emphasis on work groups, in which the group is viewed as a basic unit of the formal organization structure (Drucker, 1988; Johansen, 1988). One of the cornerstones of effective group work is communication. Effective communication is a precursor to meaningful collaboration and coordination. The rapid development and widespread availability of personal computers and telecommunication networks (especially local area networks), together with the focus on work group computing, has stimulated a significant increase in the development of groupware.

The term, groupware, was initially used in 1978 by Peter and Trudy Johnson-Lenz, although Douglas Engelbart is credited with conceiving the idea as far back as 1962 while a fellow at the Stanford Research Institute (Johansen, 1988). The groupware concept begun to take the form of a product in 1989 when Lotus Development Corporation introduced Lotus Notes. Lotus Notes (Notes) is a client-server platform for developing and deploying groupware applications. Notes combines electronic mail and computer conferencing with database features that allow users to access, track, share, organize and view document-oriented information in a variety of ways.

While groupware products are proliferating at work and fueling speculations about their potential to enhance organizational effectiveness, it has been suggested that the implementation of such technologies is more diffi-

**Groupware at Work: Users’ Experience with Lotus Notes**

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Ohio University

Many companies have chosen groupware to support their work groups. How is groupware, such as Lotus Notes, used in organizational settings and what are users’ reactions to the use of groupware? This paper reports partial findings from an electronic survey on individuals’ acceptance of groupware in three Fortune 500 companies. The results suggest that (1) groupware use is contextual and (2) users’ reactions to groupware implementation may depend positively on how groupware is implemented and used in a particular organizational context. Specifically, organizational differences, such as implementation policy and on-going education and training may determine individuals’ use of groupware. Further, the intensity and scope of groupware use may affect individuals’ satisfaction with and perceived benefits of using groupware.

cult and yields more unintended consequences than is typically acknowledged (Bullen and Bennett, 1990; Grudin, 1988; Kling, 1991; Orlikowski, 1992). If indeed groupware can offer what it has promised, then studying the use of groupware in the workplace should be valuable for understanding how such technology is implemented and used and how its use is affecting productivity in today’s organizations.

The questions of whether groupware technologies are being used in organizations and how they are being used in organizations that have implemented this type of technology is important for at least two reasons (Markus et al., 1992). First, how such technologies are used is believed to condition their effects. Second, because people use groupware with other people, one person’s choices about how to use groupware may have consequences for other group members.

This paper describes some of the findings from an exploratory field study on the use of Lotus Notes and its organizational impact. The purpose of this paper is to provide partial findings regarding users’ reactions to Lotus Notes. The following sections provide a brief description of the research method, partial research findings, and discussion. For more complete and detailed analysis of the results, including theoretical rationale and hypothesis testing, see Lou (1993).

Research Method

Samples

This study was conducted in three Fortune 500 organizations. For purposes of confidentiality, the three organizations are designated as Company A, Company B, and Company C. Company A operates in the life insurance industry while companies B and C belong to the oil and gas industry.

Users access Notes mainly by means of personal computers located on their desks that are connected to a local area network (LAN). Users in the three companies were primarily white-collar managerial and technical or professional employees. Once installed, use of Lotus Notes was free to employees in all three companies, a policy that may have influenced usage. Nonetheless, since this factor was constant across the three companies, an examination of other independent factors that contribute to variation in the individual level of use remains a valid undertaking.

Data Collection

An electronic survey via Notes served as a focus for data gathering. The questionnaire was adapted from previous studies on computer-mediated communication systems (CMCS) in general and electronic mail and computer conferencing in particular (Kerr and Hiltz, 1982; Steinfield, 1986; Markus et al., 1992) and redesigned as a Notes database1 form. The decision to use Notes to study Notes was based on the view that this tool would provide advantages over a conventional paper and pencil survey, such as instant distribution of the questionnaire to Notes users, automatic collection of responses, and easier monitoring and follow-up. As a research tool, electronic surveys have been found to be as effective for data collection as traditional paper and pencil surveys. A study comparing both types of surveys reveals no significant differences in the rate of participation, number of questions completed, and time spent completing the questionnaires (Sproull, 1986). On the positive side, respondents to an electronic survey are more likely to use the entire range of response categories instead of just the middle categories when compared to traditional surveys (Kiesler et al., 1984; Kiesler and Sproull, 1986). On the negative side, prior studies also confirm that the relevant population for an electronic survey is restricted to those who have access to computers and feel comfortable using them. In the present study, since the relevant population in each company was confined to Notes account holders, this weakness was not viewed as a problem as far as the research objective is concerned.

To solicit participation in the survey, a letter was sent via Notes mail to all Notes account holders’ Notes mail boxes on a number of Notes servers at two research sites (Company A and Company C). In Company B, the letter was sent to the potential respondents’ electronic mail boxes via Microsoft Mail because company policy did not allow use of the Lotus Notes mail feature - a policy that may also have affected individuals’ use of Notes in

<table>
<thead>
<tr>
<th>E-mail Sent</th>
<th>Responses</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company A</td>
<td>270</td>
<td>60</td>
</tr>
<tr>
<td>Company B</td>
<td>199</td>
<td>48</td>
</tr>
<tr>
<td>Company C</td>
<td>700</td>
<td>87</td>
</tr>
<tr>
<td>Total</td>
<td>1169</td>
<td>195</td>
</tr>
</tbody>
</table>

1The response rate may actually be higher due to the fact that some Notes account holders may not have opened their mail or even logged into Notes during the time period of the survey.
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