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An Empirical Study of Electronic Mail Usage

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With electronic mail becoming a common communication medium in organizations, it is important that managers understand the nature of its use and its potential impact on the organization. An empirical study was carried out to investigate the use and perceived impact of electronic mail at four different Canadian Public Sector departments (n = 2,437). Based upon a review of the literature, a number of propositions were generated dealing with electronic mail use, and its impact on organizational communications, on other forms of communication media, on productivity, on decision making, and on organizational climate. The differences between managers and non-managers, and males and females use and perceptions of the impact of electronic mail were also investigated.

A five-part, eleven page questionnaire was developed (approximately 107 questions in total). The first part gathered information about the respondents and their access to electronic mail facilities. The second part asked them to estimate the number of E-mail messages they sent and received. The third part presented them with a series of statements about how electronic mail has impacted how they did their job. The fourth part of the questionnaire asked respondents how often they used electronic mail in their work to carry out various tasks. The fifth and final section asked about the impact of electronic mail on other types of communication media.

Scales for each of the six constructs (i.e., usage, impact on communications, impact on the use of other media, impact on productivity, impact on decision-making, and impact on organizational climate) were developed. The reliability of the scales were tested by calculating Cronbach's alpha values and the scales were refined where necessary. The propositions were tested using a combination of descriptive statistics and MANOVA (Multiple Analysis of Variance) techniques. MANOVA techniques were used to analyze the different responses between males and females and managers and non-managers among the scale items. The interesting findings are discussed below.

Organizational information processing theory suggests that managers would tend to use less electronic mail because their tasks are more suited to communication media which have higher social presence (i.e., face-to-face communication or telephone) (Rice & Shook, 1990). The results of the study found that, contrary to the theory, managers used electronic mail significantly more than non-managers within their work group and within their department. There may be two explanations for why managers use electronic mail more than non-managers. Perhaps not all the tasks managers carry out may require communications with high social presence. Their more routine tasks may well be very suitable to electronic mail communication. Crawford (1982) supports this position.

A second explanation concerns the ability of electronic mail to transmit various cues (i.e., its bandwidth) and electronic mail's social presence (i.e., the extent to which the receiver

feels the sender is present). If electronic mail had higher bandwidth and social presence, consistent with information processing theory, it would be suitable for more non-routine managerial tasks than was previously assumed. The results of this study lend support to this explanation. Rice and Shook's (1990) study also lends support to the idea that electronic mail has medium information richness and social presence. They suggested that electronic mail is perhaps close to telephones in social presence and is particularly good for tasks involving situational constraints.

Women used electronic mail significantly more than men for communication outside their work group; however, there was no difference between their use of E-mail within their work group. These findings lend some support to Hiltz and Johnson's (1990) suggestion that women view electronic mail more favourably and use it more because of its lack of social cues (i.e., status, dominant roles). It is possible that these feelings are stronger outside of their work group since within their work group, the women may be more comfortable with the men in their group.

Consistent with previous findings (e.g., Kiesler et al., 1984; Hiltz, 1984; Rice & Torbin, 1986; Kerr & Hiltz, 1982), the respondents felt electronic mail made it easier to communicate within their organization. Users did not feel that electronic mail made it easier to communicate outside of their organization. This may have been due to the difficulty of connecting different electronic mail systems between organizations or simply the lack of connections to organizations outside their departments. It may also be more important to have a strong social presence with people outside the organization (e.g., customers) which would make electronic mail less suitable.

Even though the respondents felt that communications was easier, they did not feel that they were more informed. This is not surprising because the two are not synonymous. Easier communications would only lead to people being more informed if the improved communication ability was used to inform people. It appears that this did not happen in the organizations studied. The views of the respondents were consistent across men and women and managers and non-managers.

Respondents felt that the other forms of communication media (i.e., written, telephone, face-to-face) all decreased since they began using electronic mail. This is consistent with previous findings in the literature. The relative amount each type of communication media decreased is also consistent with information processing theory (i.e., written decreased the most while face-to-face decreased the least).

The literature strongly suggested that electronic mail enhanced productivity, efficiency and effectiveness. The respondents of this study generally agreed with this, although managers had a significantly more positive view of the impact of electronic mail on productivity than did non-managers. This may be related to the managers' higher use of E-mail and/or it may reflect a higher awareness of productivity issues by managers. Women felt significantly more strongly than men that they relied on electronic mail to do their job. Again, this could be tied to their somewhat greater use of E-mail.

The negative aspects of using electronic mail for decision making described in the literature were not supported in this study. Respondents did not think that the use of electronic mail lead to hasty decisions. The positive aspects of using electronic mail for decision making were marginally supported. Managers felt significantly more strongly than non-managers that E-mail use in decision making leads to including more people and makes it faster to resolve issues. These findings may be related to the managers higher use of electronic mail in general and/or their more frequent use of E-mail to make decisions.

The suggestions in the literature that electronic mail may lead to technostress (e.g., Gardner & Schermerhorn, 1988) were supported. All respondents agreed fairly strongly that electronic mail lead to more job stress while non-managers agreed to this significantly more than did managers. Possibly non-managers feel more stress because managers can use electronic mail to increase the demands on non-managers without the buffering effects of face-to-face interaction. Managers also had a significantly more positive view of the impact of electronic mail on job satisfaction, value to the organization, and the ability to cross hierarchical barriers than did non-managers. This could be due to their greater use of E-mail and it is consistent with their more positive view of electronic mail's impact on productivity and decision making.

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