The Relative Importance of Computer-Mediated Information Versus Conventional Non-Computer-Mediated Information in Public Managerial Decision Making

ZHIIYONG LAN
Arizona State University

CRAIG R. SCOTT
University of Texas-Austin

This study explores the relevance of computer-mediated information to organizational decision making in today’s state and local government agencies. It examines the extent to which computer-mediated information is available to, and utilized by, organizational decision makers when compared to more conventional information media such as formal upper-management directives, person-to-person conversations, or personal knowledge. Findings suggest that computer-mediated information plays an important role in organizational decision making, even though its utilization is perceived to be less than its availability. Managers reported using computer-mediated information across various decision situations (routine, nonroutine, high risk, and low risk), with varying emphasis. The study also reveals that in spite of the pervasiveness of information technology, managers today still rely on their personal knowledge for organizational decision making more than they do on any other information media, including computer-mediated information. The paper concludes with a discussion of how these findings shed light on our understanding of the appropriate role of computer-mediated information in managerial decision making and on the direction of our future research.

It seems clear that information technology is pervasive in many of today’s organizations (Caudle, Marchand, Bretschneider, Fletcher, & Thurmaier, 1989; Fletcher, Bretschneider, & Marchand, 1992; Kraemer, Dutton, & Northrop, 1981). Equally plentiful are discussions on the merits of the use of computer information systems to support organizational decision making (Jones & McLeod, 1986; Ross, 1994; Tang, Lee, & Yen, 1991) and the determinants of decision makers’ information media choice in their decision-making activities (Luthans & Koester, 1976; Shangraw, 1986). Nevertheless, empirical assessment on actual managerial use of computer-mediated information for decision making relative to their use of information mediated through conventional methods in today’s organizations is still limited (Cahill, Stevens, & LaPlante, 1990; Jones & McLeod, 1986); however, speculations that computer information systems are “increasingly relied upon to improve organizational decision making” can be found (Saunders & Jones, 1990, p. 32).

With this in mind, the current study aims to fill this empirical gap. It tries to answer the question that given the advances and pervasive penetration of computer technology in today’s organizations, to what extent has computer technology joined more conventional information media in providing information for organizational decision makers. The study also compares public managers’ judgments of the availability and utilization of computer-mediated information with non-computer-mediated information. The non-computer-mediated information includes conventional information bases such as personal knowledge, interpersonal contacts, and upper-management delivered formal documentation. The study
begins with a background review leading to several hypotheses; then, a review of the methods used to collect the data; and next, a presentation of the results from this study. Finally, we draw conclusions and discuss implications for future research in this area.

**Background Review and Hypotheses**

**Computer as Information Medium**

Since the 1950s, organizations have been computerizing the storage, retrieval, and processing of huge amounts of data as a technological approach to improving the content and flow of information within and between organizations (Kraemer, Dutton, & Northrop, 1981). Among the major benefits that had been anticipated from computing were improvements in the information for planning and management decision-making, in administrative control, in operational performance of departments, and in the work environment of employees (Heal & Mason, 1963; Kraemer et al., 1981). In their extensive study of forty-six advanced computer user cities throughout the nation in 1976, Kraemer and his colleagues found that chief executives, top staff, department heads, support staff, and professional staff all reported a degree of usefulness of computer-based information for their decision-making activities (Kraemer et al., 1981, p 65). Another study of a similar group of cities (with different respondents) in 1988 by Kraemer and his colleagues reconfirmed their earlier finding that managers in organizations rely on computer-mediated information for decision making. Their comparative statistics show that managers were slightly more favorable to computer mediated information in 1988 than they were in 1976 when the study was first conducted (Northrop, Kraemer, Dunkle, & King, 1990, p. 507). Kraemer and his colleagues were not alone in articulating this position. Jacob and colleagues (Jacob & Pakath, 1991; Jacob, Moore, & Whinston, 1989) also observed that computer systems have been widely accepted as assistants to decision makers in a variety of decision making tasks and are being increasingly utilized. Mukhopadhyay and Cooper (1992) argued that this trend is expected to continue for the remainder of the century, making the appropriate use of such systems a top organizational priority.

Jones and McLeod (1986), however, noted that despite technological advancements, decision makers still rely on non-computerized media more than they do on computerized media for information. They intensively examined the decision behavior of five managers and found that computer-mediated information was not part of the managers’ information system, though it was likely to be used by people the managers considered as information sources, such as their assistants. Their research concluded that verbally-based media were more valued by decision makers and that “the computer did not emerge as a key medium” (p. 236), making up only 3.4% of the organizational information flow.

More recently, Saunders and Jones (1990) observed that decision makers use “a network of peers, bosses, subordinates, and outsiders to gather solicited and unsolicited information bearing on the decision. The decision maker also employs such communication media as the telephone, scheduled and unscheduled meetings, computer and non-computer reports, and social activities” (p. 30). Computers, according to Saunders and Jones, play only a limited role in the decision making process.

Disputes such as this warrant our effort in conducting more empirical examination, particularly when findings in the past have not been able to be pervasive in one direction or another. Thus, we hypothesize:

**H1.** Organizational managers rely on computer-mediated information for decision making as much as they rely on information mediated through conventional means.

Various conventional means for information storage, processing, and transmission exist. Jones and McLeod (1986) compared the use of computer-mediated information with verbally-based information (interpersonal communication). Sanders and Jones (1990) studied the use of computer-mediated information against the use of information informally obtained from a network of peers, bosses, subordinates and outsiders (interpersonal communication). Shangraw (1986), too, made a conscientious effort to examine factors that would affect managers’ choice of computer-based information over printed information (hard copy documentation) in a policy making environment. Decision making theorist Herbert Simon (1945) once pointed out that organization is a complex pattern of communications and other relations in a group of human beings. This pattern provides the individual with information for entering his decision. And the major subsystems of communication within the organization are identified by an earlier organizational theory giant Chester Barnard (1938) as the formal organization and the informal organization. The formal organization is a system of consciously coordinated activities. It involves authority and hierarchical control (upper management directives), while the informal organization is the aggregate of the personal contacts and interactions of associated groupings of people who do not have formalized management-subordinate relationships to one another (informal interpersonal contacts). Following their line of argument, we can divide organizational communication into formal communication—generally involving commands in writing from upper management, and informal communication—generally using verbal format.

Also, the human mind itself is one type of information medium. It is an entity that receives, processes, stores, and retrieves information just like a computer system (though at a more complex level), or an aggregate of people, or printed documentation. The previously stored and processed infor-
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