The Role of E-Mail on Information Overload in Organizational Managers

by

Bruce K. Bell

M.A., Pennsylvania State University, 1971
B.A., Pennsylvania State University, 1969

Dissertation Submitted in Partial Fulfillment of the Requirement for the Degree of Doctor of Philosophy
Applied Management and Decision Sciences

Walden University
February 2000
DOCTOR OF PHILOSOPHY DISSERTATION
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ABSTRACT

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ABSTRACT

This descriptive case study explored the role of e-mail on information overload in organizational managers. Conducting research at two international organizations in Central Virginia, the researcher surveyed 73 managers, conducted in-depth interviews with 12 managers, and completed an organizational records review of e-mail messages sent and received. The quantitative data were analyzed using the Pearson correlation coefficient to discover relationships between each of three subscales: the presence and perceived value of e-mail, resistance to information technology, and the experience of information overload. An independent t-test examined the responses of men and women. Those data revealed no statistically significant relationships between the variables and no statistically significant differences between men and women in their experience of information overload.

Qualitative data collected from interviews, however, disclosed that some managers did feel overloaded with information, although e-mail often helped to alleviate some of the stress from overload. Others claimed not to experience such overload from e-mail; factors that distinguished between these two responses include experience with information technology and time spent as a manager. The records review confirmed the numbers of e-mail messages sent and received by managers at the two organizations.

Lessons learned from this study include the importance of evolving technology, technologically experienced managers, usage guidelines, and training in the effective use of e-mail technology. The research suggests a starting point for future studies into that technology and the effects that it may have on individuals who must use it regularly.
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CHAPTER 1: INTRODUCTION TO THE STUDY

Introduction

Electronic mail has become a popular means of communication within modern professional organizations. Many research studies and advocates of information technology tout the benefits of e-mail, but often those studies and proponents fail to recognize some potential limitations of e-mail. One such limitation may be information overload created in managers who receive excessive amounts of information through this new information technology. This dissertation explores the role of e-mail on information overload in organizational managers.

Electronic mail—e-mail—has been hailed as "a technology that is useful at every level of operation in a company" (Caswell, 1988, p. 3). In fact, Caswell claimed that the greatest challenge to top executives is convincing others in the organization to adopt the widest possible use of e-mail. Rehearsing all the direct and indirect benefits of this specific information technology, he mentioned not a single possibility that this new technology could create unforeseen problems. In spite of Caswell's optimism, however, the ease of sending e-mail might generate excessive information flow that could lead to information overload, especially among managers who are, by definition, responsible for planning, organizing, leading, and controlling organizations (Robbins & Coulter, 1999). Each of those managerial functions demands communication, and, according to Robbins and Coulter, e-mail is one communications tool that is "fast and cheap and can be used to
send the same message to numerous people at the same time. It is a quick and convenient way for organizational members to share information and communicate” (p. 325).

As a recent technology, e-mail does seem to have changed the nature of communication within organizations. E-mail as it is known today was introduced in 1971, although it was originally used exclusively by defense scientists and university researchers (Caswell, 1988; Stone, 1997). Within other professional and business organizations, e-mail is a communications tool that has emerged only since the early 1980s (Rose & Strom, 1998), highlighting the recency of this technology. Especially within the corporate setting, this is a relatively new means of communicating with colleagues, senior executives, subordinates, clients, and customers. In addition to permitting fast, efficient, and inexpensive exchange of information with locations worldwide, however, e-mail might also contribute to excessive input to managers who must process information and make decisions based on that information.

Modern organizations have been defined as collectivities designed to pursue specific goals with a relatively high degree of formalization (Scott, 1998). Scott described organizations as coordinated systems that use communication to link all participants, suggesting that the modern organization has emerged largely because of its superior ability to manage the flow of information. In fact, meaningful communication and the effective flow of information may be central to the very existence of organizations. Morgan (1997) commented that organizations are information systems, in the sense that members can access information from anywhere in the organization and become full participants of the learning process. In a similar vein, Katz and Kahn (1978)
argued that communication is “the very essence of a social system or an organization” (p. 428), because virtually every social interaction is subsumed under and involves communication.

Guffey (1997) postulated that formal communication within professional organizations must flow downward, upward, and horizontally in order to resolve problems, reduce costs and delays, and take full advantage of today’s workers. Related to that flow of communication, Guetzkow and Simon (1960) examined three specific communication networks, each displaying either a centralized or decentralized structure. In that classic study, these researchers first described the wheel pattern, in which communication flows from a hub to its spokes and back again. There is little horizontal communication in that highly centralized network. In the circle pattern, organizational members may share information with one or two others in an organization, but there is little communication across that organization. The communication flow is less restricted than in the wheel pattern, but it is hardly as open as Guffey seemed to recommend.

Finally, Guetzkow and Simon described the all-channel communication network, in which organizational members may communicate freely with all other members in an unrestricted and decentralized manner. Such a pattern might appear to be most appropriate to and effective in modern organizations, where closed communication climates are discouraged (Guffey). Since communication may be defined as “the process by which a person, group, or organization (the sender) transmits some type of information (the message) to another person, group, or organization (the receiver)” (Greenberg & Baron, 1993, p. 489), any restriction to that process would appear to
diminish the organization's effectiveness. Guetzkow and Simon acknowledged that much contemporary management literature does suggest reducing communication restrictions in order to have a more smoothly functioning organization. Their research, however, indicated something different. They found that unrestricted communication may not be the ideal path to an effective organization.

The unrestricted flow of information may at times create unforeseen difficulties, one of which could be an overabundance of information that cannot be adequately processed by the receiver. Katz and Kahn (1978) recognized that any social system—including organizations—might have to deal with information overload when it is required to handle communication input that is greater than it or any of its components can handle. They explained:

In terms of information theory, unrestricted communication produces noise in the system. Without patterning, without pauses, without precision, there is sound but there is no music. Without structure, without spacing, without specifications, there is a Babel of tongues but there is no meaning. (p. 430)

An important tool for disseminating information in organizations today is technology. Morgan (1988) saw various information technologies as among the most important forces reshaping modern organizations. In a later work, Morgan (1997) cited the potential of using those technologies to support the development of learning organizations. In a similar fashion, Drucker (1980) recognized that new information technologies may create radical change in organizations and in managers who must manage that change, but he sensed that such technologies could be either an opportunity
or a threat. Electronic mail is among the most prevalent of those new technologies in the modern organization. According to Murphy, Hildebrandt, and Thomas (1997), “E-mail is beginning to dominate day-to-day communications in business organizations” (p. 120). Scott (1998) saw in e-mail the potential for making even easier the all-channel connections as studied by Guetzkow and Simon (1960). He argued that e-mail influences the flow and direction of communication in organizations, posing potential problems for hierarchical organizations. That possibility, Scott claimed, presents “a cluster of constraints and possibilities that requires interpretation and learning, and whose effects will vary across actors and situations” (p. 161). Thus, e-mail, as an information technology, appears to influence both organizations and individuals within those organizations. The use of that technology, then, may have both sociological and psychological implications that warrant serious study.

This study explores the role of e-mail on information overload in organizational managers. Katz and Kahn (1978) defined information overload as “communication input greater than the organization or certain of its components can handle” (p. 450). This empirical inquiry investigated this contemporary phenomenon within the real-life context of two international organizations. As a research strategy, data were gathered from surveys, a records review, and in-depth interviews with organizational managers. Finally, the research paradigm of this study was primarily qualitative, since the methodology was inductive. This means that the conclusions of the research were drawn from the triangulated evidence gathered in the surveys, records review, and in-depth interviews. In such a qualitative paradigm, “The conclusion explains the facts, and the
facts support the conclusion” (Cooper & Schindler, 1998). The ontological assumption was that the reality observed was subjective, in that the researcher interpreted reality largely as the attitudes and experiences of the informants constructed it.

Epistemologically, the researcher interacted closely with the subjects being studied, rather than remaining distant or independent from the participants. Thus, this research study fell within the qualitative paradigm (Creswell, 1994; Kazdin, 1998).

Purpose Statement

This study was designed to explore the role of e-mail on information overload in organizational managers. Because of all the information available through technology, it has been suggested that it might be beyond the ability of any individual to process it effectively (Lacy, 1996). Past studies have frequently either ignored the potentially negative aspects of information technology contributing to information overload or been extremely broad in their consideration of causes of information overload. Where Shenk (1997), Lacy, and Brod (1984) explored the societal effects of technology, and where Postman (1992) railed against technopoly—defined as the deification of technology—this study acknowledged that e-mail has become and will remain for the foreseeable future an indispensable aspect of organizational life. Its potential role on information overload was analyzed with a goal of understanding how managers respond to the abundance of e-mail messages that they may have to process regularly. The first part of this study sought to find if, in fact, e-mail in the managerial subsystem is creating information overload. How managers respond to some of the effects of overload was also explored. Another aspect
of this study determined if men and women respond differently to large quantities of e-mail messages in the professional setting. Finally, this research effort attempted to learn if individuals who resist information technology suffer from greater effects of information overload.

The purpose of this study was to understand how managers handle large numbers of e-mail messages that are received daily and to arrive at tentative conclusions that may help other managers handle the information overload that could result from excessive e-mail. Through surveys, records review, and in-depth interviews, the researcher developed a descriptive case study of how e-mail might contribute to the experience of information overload in organizational managers.

Discovering the role of e-mail on information overload is a significant topic for managers in modern organizations for several reasons. First, e-mail is among the fastest growing communications technologies in human history (Caswell, 1988) and has been found to be the most frequently used communications tool for managers in some fields (American Management Association, 1998). Therefore, researchers and practitioners need to understand more about its limitations and benefits. Second, social change problems in organizations, such as physical and psychological stress, have been identified as the result of increased technology (Albrecht, 1979; Hickson & Stacks, 1998), but research has not shown that those problems may be caused by e-mail. At least one study emphasized the advantages of e-mail in communicating affect with colleagues (Woods, Jeffrey, Troman, Boyle, & Cocklin, 1998), but those sanguine findings could be misleading. Those researchers explored a single team of professionals working toward a
common objective over a 12-month period, and the disadvantages they cited appear to be an afterthought. Third, tentative findings have suggested that gender differences may exist in the perception and use of e-mail (Gefen & Straub, 1997), but the literature is not well developed in that area. In fact, other research is both inconclusive and contradictory regarding gender and attitudes towards information technologies (Aguinis & Adams, 1998; Allen & Griffeth, 1997). Finally, information overload has been identified as a major issue on an organizational and individual level (Reuters, 1996, 1998), but no scholarly research has been conducted on the precise role of e-mail on that phenomenon. Since managers are essential to every type of organization (Morgan, 1997) and employ information in virtually all of their functions (Mintzberg, 1973), they constitute an important and appropriate group to study. Consequently, this study contributes to the scholarly research and literature in the field.

Problem Statement

Major questions have been raised in the literature about the potential of information overload, especially in an age of new technologies. In spite of research studies that have examined that phenomenon by studying virtually all sources of information input (Reuters, 1996, 1998; American Management Association, 1997, 1998), there has been no in-depth study to date of the exclusive role of e-mail on information overload. This failure exists even while e-mail is being increasingly cited as one of the most popular communications tools in the workplace (Caswell, 1988). Additionally, little work has been accomplished on the relationship between a worker’s
resistance to information technology and his or her experience of information overload. Moreover, organizational managers have a constant need to both send and receive essential information (Beck, 1999), making them especially vulnerable to the possibility of information overload. To date, that population has received insufficient attention in studies of information overload.

Finally, numerous studies point to gender differences in attitudes towards and use of information technologies and response to communication overload (Scott & Rockwell, 1997; Winter & Huff, 1996). For practical use in organizations, however, those studies appear flawed. They have been conducted not in the workplace but among high school or undergraduate students. In addition, most studies have relied heavily on surveys, with few efforts at probing through in-depth interviews. Consequently, research into gender and its influence on information overload from technology has been often contradictory and misleading.

What appeared to be missing was a study of the role of e-mail on information overload in male and female managers. Independent variables in this research include the presence of e-mail, resistance to information technology, and gender. The dependent variable is the experience of information overload.

**Background of the Problem**

Social change is a defining reality in modern organizations, and information technology has radically changed the way many organizational members communicate (Robbins & Coulter, 1999). According to Naisbitt and Aburdene (1985), computer
technology, which facilitates the flow of e-mail, is altering not only organizations but also the workers themselves. Hammer and Champy (1993) offered a similar view, citing information technology as an “essential enabler” (p. 44) that permits organizational reengineering. They described reengineering as the path to change. Acknowledging both the breadth and pace of change, this research study sought to discover how managers in today’s organizations are affected by one aspect of information technology. Moreover, because of the burgeoning use of e-mail, this research has made a contribution to assumptions regarding information overload among organizational managers.

Buckholtz (1995) highlighted the application of information technology throughout all levels of human experience. Based on his study of numerous private and public organizations, he argued, “Essentially all entities rely on information systems and technologies” (p. 14). Like many advocates of information technology, though, Buckholtz saw the advantages and opportunities of that technology while ignoring some of the more insidious effects of too much information that may be generated through it:

Both people and systems benefit from abundant [emphasis added], qualified information. An individual or system derives from qualified information the confidence with which a decision can be made. If the confidence level is too low, the tools are at hand to specify and pursue additional information. (p. 318)

He viewed abundant information as a goal inside organizations, and yet that abundance could lead to dysfunctional behavior, especially for the recipients of all those messages. A more balanced approach may be Sproull and Kiesler’s (1991/1995). Based on 8 years of social science research in organizations, they concluded that more information is not
always more valuable than less information. An overload of information could lead to near paralysis, where decision-making becomes almost impossible.

The organizational manager is in a position to use information to make and implement decisions. While not addressing specifically the challenge of information technology, Argyris (1971) spoke of organizations as “information-processing systems” (p. 15), commenting on the manager’s essential role in effective decision making. More recently, Robbins and Coulter (1999) saw the management process as “the set of ongoing decisions and work activities in which managers engage as they plan, organize, lead, and control” (p. 12). To greater or lesser degree, information is required in each of those four functions of the manager, and e-mail is a tool that could dramatically influence the manager’s ability to seek and receive information. Based on interviews with chief information officers at various organizations, Ebert and Griffin (1998) cited the amount of information available to managers as reaching “staggering” proportions, while arguing:

New forms of technology have added to a manager’s ability to process information while simultaneously making it even more important to organize and interpret an ever-increasing wealth of input. . . . With e-mail . . . planning, decision making, and other activities are beginning to benefit from group building and teamwork. (p. 143)

Thus, technology, managerial function, and structure appear to be merging in many organizations. Organizations are using new technologies and recognizing the productive advantages of teams (Ouchi, 1981), providing managers both the opportunity and the
obligation to use those technologies, specifically e-mail, to gather information for managing the enterprise.

As organizations increasingly adopt information technologies—to include e-mail—significant change may occur among the various levels of the organization or among the organization’s participants (Drucker, 1980, 1982). For example, one executive spoke specifically of e-mail as “a major cultural event—it changes the way you run the organization” (Ebert & Griffin, 1998, p. 143). On the one hand, it is argued that the manager’s ability to make high quality decisions is enhanced through the use of information technologies (Buckholtz, 1995; Scott, 1998). On the other hand, along with the perceived benefits of information technology in general and e-mail in particular, there may also be a concern about how managers can handle the information overload caused by the ease of sending e-mail messages. One case study revealed that Microsoft encouraged its employees to use e-mail to express their views on company matters to anyone in the organization (Lahiff & Penrose, 1997). While that policy may have been intended to strengthen employees’ connection with senior decision-makers, the result could be a burdensome volume of e-mail to which managers feel obligated to reply.

It might be a mistake to accept uncritically Ebert and Griffin’s (1998) argument that “new forms of technology have added to a manager’s ability to process information” (p. 143). While the manager may be enabled to receive more information, that may not translate into an equal ability to process that information. Katz and Kahn (1978) emphasized the limits of information that any individual can receive, code, and effectively handle, limits that are supported by various experiments and other research
(Bernays & Wcislo, 1994; Meier, 1973; Miller, 1960). That explains the need for restricted communications networks within organizations. Without restrictions on information received, an individual might become overloaded.

The limits for processing information within organizations may be uniquely fragile at the managerial level, since individuals at that level receive information input from every subsystem in which they play a role. The possibility of information overload, then, could become considerable. Lively (1996) discussed the amount of junk mail that is conveyed through electronic means. That is, messages that are unsolicited accumulate, do not assist the manager in making better decisions, and interfere with the important organizational work that needs to be accomplished. Regardless of the value of those unsolicited messages, they require some processing energy and time to determine their true nature, and those resources are wasted from more productive pursuits. Lively’s conclusions seem to have validity, but she failed to support her work with any serious in-depth research or analysis. In addition, she failed to discover how managers actually attempt to sort out those e-mail messages that support effective decision making from those that she described as junk mail.

Another aspect that was considered in this study is the difference in communication styles of men and women. Tannen (1990), for example, argued that men and women understand reality and communicate in different ways. For example, while women use communication to seek intimacy, men seek independence as a primary means of establishing status. Tannen’s research as a sociolinguist suggested that for women, conversation becomes a language of rapport, whereas men use conversation more for
exhibiting knowledge and skill and thus to maintain status in a hierarchical social order. Everyone, she contended, is shaped by numerous influences, chief among which is gender. In an effort to affirm equality, some individuals have sought to ignore gender differences, especially in the workplace, but that effort generally leads to frustration and enhanced misunderstanding, Tannen claimed. Only through recognizing some of their essential differences in communication style may men and women be freed from “the burden of individual pathology” (p. 17). Because men and women communicate so differently, they may also respond differently to messages conveyed through e-mail, leading to a subquestion in this study regarding gender’s influence on the presence or severity of information overload.

It is possible that resistance to information technology is a way of coping with the risk of information overload. An additional subquestion considered individual resistance to information technology and the role that resistance plays on overload. Kotter (1996) believed that major changes, such as the successful introduction of e-mail to the organization, have helped some organizations adapt significantly to shifting conditions in the competitive environment. On the other hand, anticipated information technology improvements in some other organizations have been disappointing, “with wasted resources and burned-out, scared, or frustrated employees” (p. 4). One source of that pain and frustration might be, in part, employees’—or managers’—reluctance to adopt the new technology. Such resistance could be a factor in the dysfunctional effects of information overload, and that resistance was examined as part of this research.
Theoretical Framework

Classic communication theories portray all communication as a process through which people share thoughts, ideas, and feelings in mutually understandable ways (Hamilton, 1993). While this process may be common to all individuals, its complexity makes it a challenge to understand completely and to perform effectively. This research study originates in a basic communication model. With slight variations, this model has been used in numerous scholarly works on communication (Hamilton; Lahiff & Penrose, 1997; Murphy et al., 1997). The model has been portrayed as containing six essential elements, including context, sender (or encoder), receiver (or decoder), message, feedback, and medium.

Some believe context to be primarily a physical phenomenon. Hamilton (1993), for example, calls this element “environment,” and describes it in terms of time, place, and physical surroundings. While she does add the social environment in her study of communication, it appears secondary to the physical. Others hold that this aspect is more personal. Lahiff and Penrose (1997) address this issue as “perception,” defined simply as “our unique understanding of the way things are” (p. 35). Murphy et al. (1997) are most inclusive, recognizing that the context of any communication involves external components, such as nationality, culture, and organizational structure, and internal components that may include such stimuli as attitudes, opinions, and past experiences. The context of any communication will influence both the sender of a message, the receiver, and the exchange between those two.
Senders of messages place their thoughts into some symbols that are believed to be recognizable by the receiver. That process is known as encoding. The sender's facility with words and ideas may influence greatly his or her ability to effectively generate those symbols. At the other end of the communication process, the receiver must be able to decode those symbols. In other words, he or she must have the tools to comprehend the message intended by the sender. Beck (1999) insists, rightly, that "communication refers to the message perceived rather than to the message sent in an organization" (p. 380). Therefore, encoding and decoding are important skills, and they are influenced intensely by context.

The message is the core idea the sender wishes to communicate, and it may be expressed in words or through nonverbal symbols. While this appears to be the central purpose for any communication, it is only a part of the entire process that takes place when two or more people communicate. In addition, since the message perceived may not be the message sent (Beck, 1999), feedback from receiver to sender is important to confirm if, in fact, the intended message was received. Feedback refers "to the verbal and visual responses to messages . . . a self-monitoring response that allows individuals to modify their behavior until it meets their expectations" (Hamilton, 1993, p. 18).

For the purposes of this empirical study, the medium is of central importance. The medium, or channel of communication, is the means selected by the sender to convey the message. Byers (1997) introduces three models of communication that view the process as action, interaction, or transaction. In the action model, communication is one-way transmission, with little opportunity for feedback. The interaction model includes
feedback from the receiver to the sender, thereby making this a two-way, rather than a one-way model. This improves the process through its interaction between or among the individuals involved. The transaction model is perhaps the most sophisticated, seeing the participating individuals as both sender and receiver simultaneously, each responding to external and internal stimuli. Individuals are not first a sender and then a receiver; they are continually both. Central to all three of these models, however, is the medium or channel through which a message is delivered.

Murphy et al. (1997) reduce the choice of media to the printed word, sound, or e-mail. Hamilton (1993) and Neher (1997), on the other hand, explore thoroughly the process of selecting the most appropriate medium—or channel—for any given communication exchange. In his study of channels and communication systems in organizations, Neher offers certain generalizations regarding the choice of one particular type of medium, an electronic communication system, such as e-mail. He argues that such a system offers asynchronicity, since messages can be sent or received at any time; elimination of nonverbal cues of status and authority; and a tendency to blur the lines between private and organizational lives.

A final element that is included in most modern theories of communication is noise, "anything that interferes with the transmission or the reception of the message" (Byers, 1997). Byers, Hamilton (1993), and Neher (1997) offer illuminating comments on the role that physical and psychological noise may play in the communication process. Physical noise, such as a loud shredder operating close by, may inhibit the hearing of a message, while psychological noise, such as a preoccupation with another matter, may
interfere with understanding another’s message. Another aspect of psychological noise may be an individual’s attitudes and opinions, elements that could emanate from the context of the communication.

Hence, the widely recognized basic communication model is at the core of this study. Nothing in this research effort challenges its validity. What is novel, however, is the consideration of the increasing role of e-mail as a significant mode of communication in the professional organization. Specifically, the traditional communication process was studied from the viewpoint of new or increased stress points that might have been exacerbated by the e-mail medium. At some threshold, these stress points may manifest themselves in the phenomenon of information overload.

The ability of computers to generate information has been widely recognized (Ebert & Griffin, 1998; Lahiff & Penrose, 1997). Therefore, a major stress point in individual communicators using such a medium as e-mail could be information overload. Katz and Kahn (1978) defined this phenomenon as communication input that is “greater than the organization or members of the organization can handle” (p. 229). According to Lahiff and Penrose (1997), our ability to generate and transmit massive quantities of information has not been matched by an equal ability to process that information. Individuals may experience information overload in the organization and could exhibit dysfunctional behaviors from that overload.

Morse (1994) and Mertens (1998) point out that the theoretical framework in qualitative studies should focus the inquiry and provide boundaries to it. It should offer a guide to compare and contrast results, without establishing strict categories for data
collection and analysis. The theoretical framework for this study serves as a basis for posing certain research questions. For example, the researcher considered the response of organizational managers to possible information overload that might have been caused by excessive numbers of e-mail messages. In addition, gender is an important potential determinant of communication activity (Neher, 1997; Tannen, 1990, 1994), and so the researcher examined how gender might influence the presence or the severity of information overload. Moreover, since attitudes and opinions play a significant role in the context and the noise of communication, a manager's resistance to computer-mediated or information—technology was studied to see what influence, if any, that might have on information overload. Finally, as a case study, this research explored lessons that could be gleaned from managers regarding information overload in the organizational setting.

Assumptions

Merriam (1988) emphasized that the paramount objective in qualitative research is to understand the meaning of an experience. Unlike much quantitative research that is based on the assumption of a single, objective reality, Merriam asserts, “Qualitative research assumes that there are multiple realities” (p. 17). Rather than attempting to measure perceived reality, the qualitative researcher seeks to understand and interpret the subjective phenomenon.

Among the philosophical assumptions in qualitative research, five stand out as distinctives of this type of scholarly endeavor (Merriam, 1988). First, qualitative
research is concerned primarily with process rather than outcomes. Second, qualitative research emphasizes meaning, that is, what people experience and how they interpret that experience. Third, the qualitative researcher is the primary instrument of data collection and analysis and is intimately involved with the subjects of the study. Fourth, qualitative research involves extensive fieldwork, where the researcher enters the natural setting of the phenomenon under investigation. Finally, qualitative research is essentially inductive, building prepositions and creating meaning from the data.

As an inductive study, this research effort was initiated with minimal assumptions. The researcher approached the study to explore a phenomenon within a real-life context. However, based on the literature, the researcher did make certain tentative assumptions, consistent with case study methodology, regarding the subjects and the organizations in which they worked.

1. The researcher assumed that managers would be familiar with and have access to e-mail in the office.

2. Quantities of e-mail sent and received by organizational managers could lead to the experience of information overload by those individuals.

3. Male and female managers use e-mail in ways that might differ from one another on the basis of gender.

4. An individual’s resistance to information technology might influence his or her attitudes towards and use of e-mail and could alter the experience of information overload.
5. Organizational managers would be truthful in their answers to both survey questions and in-depth interviews.

Bradburn and Sudman (1979) recognized the potential for interview informants’ distorting their answers in face-to-face meetings, often to create a more positive impression on the interviewer. The final assumption acknowledges that possibility.

Significance

This research was significant in its importance and timeliness. It was important because of the potentially dysfunctional experience of information overload among organizational managers. E-mail can improve productivity in organizations by transmitting reports and other documents quickly and effortlessly (Caswell, 1988). On the other hand, the ease of transmitting those messages through e-mail could significantly aggravate the experience of information overload. Sproull and Kiesler (1991/1995) and Kraut and Attewell (1997) studied organizations where progress reports were routinely sent to supervisors and colleagues, often necessitating some reply and forwarding of messages. That situation would appear to increase the risk of information overload, a significant topic in modern organizations.

This study was timely because of the relatively recent introduction of e-mail to organizational life. Organizations are not likely to retreat from using this powerful tool for enhancing decision making, but there should be some intelligent means for harnessing the abilities and advantages of e-mail without succumbing to the disadvantages that may come from information overload. Both personal and organizational issues were involved
in the study, and while the focus was on the individual, there were organizational implications.

As recently as 1984, one major work addressed the “current struggle of individuals to adapt to computer technology” (Brod, 1984, p. xi), and yet no mention of e-mail appeared in that book. Electronic mail is sufficiently new that in some organizations more senior organizational executives might find themselves in unfamiliar territory with e-mail. At a recent conference of professionals, the top three officers of the group admitted that they were unaccustomed to using e-mail, resulting in an immediate loss of credibility with their members (O’Hair, Friedrich, & Shaver, 1998). This example highlights the recent introduction of e-mail as an information technology and thus emphasizes the timely nature of this study.

Shenk (1997) cannot be taken seriously when he suggested taking periodic data fasts, during which time individuals “stay away from electronic information for a prescribed time” (p. 189). Citing an information proficiency paradigm, Buckholtz (1995) suggested that executives improve the processes by which information technologies are used to make decisions. One solution to overload suggested by Buckholtz and Sproull and Kiesler (1991/1995) is to use filters to enhance the usefulness of the information technology. Filters allow the recipients of e-mail messages to “sort their incoming mail into various categories before they read it, based on who sent it or its topic” (p. 138). There may be advantages to using filters in handling large quantities of e-mail (Angus, 1997; Motiwalla, 1995), but there are also risks that important information could be inadvertently screened out. Those advantages and disadvantages should be seriously
considered before one indiscriminately applies filters on all incoming messages. Another
matter studied was the use of policies to determine how managers and workers should
handle e-mail. This strategy has been followed by some organizations with varying
degrees of success (Hacker et al., 1998; Hartman & Nantz, 1996; Overly, 1999).

This study is believed to be the first to examine specifically the role of e-mail on
information overload in managers. Other studies have touched on some areas of this
phenomenon, but none have dealt with this precise issue. The methodology for this study
was most appropriate to its purpose and the research questions. Surveys enabled the
researcher to glean information about organizational managers, the amount of e-mail
normally received in the course of their work, attitudes toward information technology,
information overload that male and female managers experience from that e-mail, and
their response to overload. In-depth interviews then explored individual attempts to
handle the abundance of e-mail messages, attempts that elaborated upon Buckholtz’s
(1995) and Sproull and Kiesler’s (1991/1995) recommendations to filter that information
and Overly’s (1999) suggestions to create policies for handling e-mail. Finally, a review
of organizational records offered objective reality regarding the actual numbers of e-mail
messages regularly sent and received by managers. Then the data were triangulated to
offer rich understanding of e-mail use and the experience of information overload among
managers.

The social significance of this study is in its discovery of how organizations, and
more particularly managers, are dealing with excessive e-mail, and whether information
overload as a result of that e-mail is present. In a meta-analysis of research conducted on
e-mail, Rudy (1996) found that much study has already been done on this new information technology. Additionally he found that information overload is becoming increasingly important as an area of scientific study in organizations. To date, however, the role of e-mail on information overload has been largely neglected, and this qualitative study sought to discover what that role might be.

Research Questions

Described as communication input that is greater than the organization or members of the organization can handle, information overload is not a new phenomenon in the workplace (Katz & Kahn, 1978). Mann (1998) defined information overload as simply “receiving more information than we can absorb” (p. 19). With the rise in e-mail as a communications medium within organizations, however, information overload could become increasingly prevalent. Serious students of organizations and management should ponder how individuals can possibly process numerous e-mail messages in a single day.

This study considered the following grand tour research question and four subquestions (Creswell, 1994; Werner & Schoepfl, 1987):

Grand Tour Question:

What is the role of e-mail on information overload in organizational managers?

Subquestions:

1. What is the response of managers to information overload caused by excessive e-mail?
2. How does gender influence the presence or severity of information overload?

3. How might a manager’s resistance to information technology influence his or her experience of information overload?

4. What lessons regarding information overload can be learned from organizational managers?

Scope and Limitations of the Study

The data for this study were collected through surveys, a records review, and in-depth interviews. This use of multiple methods for collecting data and gathering information allowed triangulation of data, one major advantage of case study research (Merriam, 1988; Yin, 1993, 1994). This multimethodological approach assisted in discovering the presence of information overload and the role of e-mail in that phenomenon among managers. Survey research has been found to be quite accurate for assessing information about large populations (Kerlinger, 1973). However, surveys may fail to penetrate deeply beneath the surface, whereas in-depth interviewing probed to that deeper level of meaning. Lastly, records review offer an objective means of ascertaining e-mail usage among organizational managers. The mixed methodological approach used in this study added complexity to the study and took advantage of both the quantitative and qualitative paradigms. The study was designed to triangulate the data by using results from one method to inform the others, to discover possible paradoxes or contradictions, and to extend the breadth of the inquiry (Creswell, 1994).
The population included managers in two large, international organizations that use e-mail extensively as a communications tool. Independent variables in the research were the presence of e-mail, resistance to information technology, and gender. The dependent variable was the experience of information overload. Data analysis from surveys included correlational analysis that attempted to ascertain relationships among the presence and perceived value of e-mail, information overload, and an individual's resistance to information technology. A t-test was used to examine what relationships existed between gender and the presence or severity of information overload. The analysis of interview data involved reducing the information collected to certain categories, patterns, or themes. The researcher then interpreted those data to discover the role e-mail might play in the experience of information overload. A review of organizational records provided a third data source to reveal objectively the average number of e-mail messages sent and received.

Two international, publicly owned business organizations in Central Virginia were the sites for this research. Both sites were selected because they had a total of 81 managerial level employees, providing an adequate population for the data collection effort. Because of the relatively manageable number in that population, the researcher surveyed the entire population and interviewed a purposive sample of six managers in each organization.

Selection of those organizations was not entirely random, since their location was chosen primarily for convenience. The results, then, may not be generalizable to the entire U.S. population of managers. Yin (1994), however, pointed out that case studies
should not attempt to generalize to a larger population. Rather, he argued, a case study researcher needs to attempt to generalize his or her findings to theoretical propositions that might be empirically tested in future research. As a case study, this research effort followed a purposive sampling strategy for the interviews as most appropriate to the problem and the research questions. Merriam (1988) defined a purposive sample as one from which the investigator can learn the most. Merriam highlighted nonprobability sampling—such as purposive, or purposeful, sampling—as frequently the strategy of choice in qualitative case studies, because it allows fuller discovery from respondents who know most about the phenomenon being explored. The sample of interviewees for this study were within the managerial subsystem, and the researcher sought to discover, understand, and gain insight from the members of only that subsystem.

Limitations of this research effort included some managers’ lack of understanding about the experience of information overload. For example, some individuals might not have recognized signs of stress, irritability, or illness as the possible effects of information overload. In addition, managers had to self-admit to experiencing overload, and that might result in different meanings for different managers. A second potential limitation was the complete transparency of informants. In order to appear more in control, some managers might have denied the effects of information overload caused by excessive e-mail. This denial could affect the results by indicating less experience of overload than might in reality be present. Additionally, the two organizations are involved in technological services or products, one with wireless communications and the other with nuclear decontamination and decommissioning. The high-tech nature of these
organizations could make their managers more comfortable with information technology than general managers might be in some other types of industry.

Another limitation of this study is that one company had only one female manager, thereby limiting the diversity of the studied population. Moreover, the survey instrument did not seek demographic information regarding age, race, or ethnic background, factors that might have enriched the findings of this study. Finally, since the informants came from a single geographic locale and work for international organizations, there may be a certain homogeneity about them that could skew the results. On the other hand, the professional work mobility of many managers among the sample reduces that limitation. Moreover, as many organizations move towards globalizing their operations (Robbins & Coulter, 1999), these international businesses may become more common.

Definitions

The following definitions represent the basic understanding of the major terms found in the literature. For this study, these definitions were utilized for electronic mail (e-mail), filter, information overload, listserv, manager, and spam:

**Electronic mail (e-mail):** Any correspondence sent over a computer that contains text, audio, video, or other information (Murphy et al., 1997; Parsons & Oja, 1997).

**Filter:** Any mechanism, human or technological, that assists e-mail users in screening or prioritizing messages (Motiwalla, 1995).
**Information overload:** A manager's perception of having communication inputs that exceed his or her capacity to process that information for a sustained period (Rader, 1979).

**Listserv:** An electronic mailing list that allows people to discuss issues of common interest (Long & Long, 1998).

**Manager:** Someone who integrates and coordinates the work of others, using interpersonal, informational, and decision-making roles (Mintzberg, 1973; Robbins & Coulter, 1999).

**Spam:** Any unsolicited junk e-mail (Bardsley & Shultz, 1996; Overly, 1999).
CHAPTER 2: REVIEW OF THE LITERATURE

Introduction

This study examined organizational managers as they used one specific information technology, e-mail, to send and receive information with which problems may be solved, decisions can be made, and work might be integrated and coordinated. Specifically, the research sought to understand the role of e-mail on information overload in those managers. While information overload is not a new concept (Katz & Kahn, 1978), it could become increasingly problematic for managers with the "explosive growth of information" (Alesandrini, 1992) brought about through information technology. The literature in several of these areas is rich, although no one study has looked in depth at the phenomenon of information overload in organizational managers and the role of e-mail in that phenomenon.

In his classic treatment of administrative behavior in organizations, Simon (1945/1976) pointed out that problems often exist regarding the organizing and processing of information. Information technology, he posited, may help in understanding these problems and provide a first step in solving them. Nevertheless, sensing the danger that excessive information from these new technologies could overwhelm the decision-maker, Simon acknowledged:

The effectiveness of these [information technology] systems in handling problems will depend more heavily on the effectiveness of the thinking, problem-solving,
Simon's insight is important. New technologies are valuable and may serve the manager, but he or she needs to maintain clarity of thinking and willingness to make important decisions, occasionally in the face of limited information but often in the presence of an overabundance of information. The focus of this study was less on the technology and more on the individual manager.

This study explored three major components: organizational managers, e-mail, and information overload. Consequently, this chapter is divided into three major sections. First, organizational managers and their skills are analyzed, with a particular view towards their use of information and their need for communication expertise. Moreover, their ability to demonstrate human relations skills and technological skills is explored. Second, the influence of e-mail as an information technology within organizations is examined, seeing how that new technology may be changing both organizational design and perhaps managerial competencies. Additionally, stress and anxiety, sometimes the result of or response to information technology, are considered, since they could lead to dysfunctional behavior in modern organizations, especially among managers. Moreover, the relationship between information technology and gender is explored, to determine if men and women use technology the same or
differently. Finally, information overload is studied to see some of the causes and effects of that phenomenon, particularly among organizational managers and particularly that which is exacerbated by information technology. From the literature will be seen the need for research that explores how e-mail may influence information overload.

Organizational Managers

The roles and skills of organizational managers appear to be changing from earlier generations (Drucker, 1980, 1982), partly the result of new technologies. In spite of those changes, though, some aspects of how managers operate, and especially how they need to process information, may not change. Perhaps where managers must negotiate new territory is where excessive amounts of information are received and transmitted through electronic media. Such situations, often created through new information technologies, may demand certain skills in handling people and technology. In this section, recent research and literature on organizational managers define the role and some of the skills of the manager. Among those skills may be adept handling of employees as well as new technology in the workplace. Finally, organizational structures are changing, largely the result of new technologies, and the managerial skills required within those new structures should be recognized.

Men and women both need to demonstrate communication skills within organizations, but they need other complementary skills as well. Barrier (1999) posited that among the managerial skills that are most crucial in organizations are accountability, trust, and communication, suggesting that communication is the most important skill a
leader or manager might cultivate. Communication is also cited as the first among several skills in Baldwin and Danielson's (1998) study of management development. As companies grow, the communication challenge increases, since day-to-day contact may lessen. Managers could face the increasing need to ask for information by electronic means rather than in person (Baldwin & Danielson). In larger organizations, communication using information technologies, including e-mail, is fast, inexpensive, and efficient. It might also enhance trust and accountability between workers and managers as workers' efforts are seen as valuable and contributing to the organization's mission. On the other hand, e-mail might be responsible for contributing to information overload in those organizational managers.

Human and Technological Skills

Modern organizations frequently depend on both human interaction and technology, for both are essential in most modern ventures. These two elements are particularly important for this research study into e-mail and its role on a manager's experience of information overload. Technology does not preclude human relationships; it may often enhance those relationships, especially in permitting greater access to information. Nevertheless, information technology may be changing the way people relate to one another, suggesting an important sociological dynamic inside organizations. Rule and Keown (1998) called the recent growth of technology-intensive companies "explosive." In fact, they argued, organizations need a process whereby they may both maintain and acquire new technologies, while continuing to sustain open communication
and information sharing among all stakeholders. Facilitating that communication, information technology often helps to make and support human contacts. Therefore, managers need skills in both interpersonal communication and the use of information technologies. The balance of those skills is essential in understanding how managers may respond to e-mail as a factor in information overload. Receiving information from a variety of sources, managers may seek ways of filtering that information, using either software or human filters, such as administrative assistants or secretaries.

Almost 2 decades ago, Drucker (1980) recognized the potential of such technologies on organizations. He addressed the impact of technology on the "simultaneous and instantaneous transmission of voice, of vision, and of graphics (such as documents or charts)" (p. 52), describing accurately communication within the organization of the late 1990s. Moreover, he analyzed trenchantly those technological and social innovations that might alter the structure of the economy and society.

Open communication and information sharing, largely enhanced through technology, "are key to gaining and sustaining a positive alliance" (Rule and Keown, 1998, p. 3). They demonstrate the willingness of managers to listen to colleagues, subordinates, and superiors. Moreover, communication may potentially flatten the organizational structure, leading to networks that replace hierarchical structure (Naisbitt, 1982/1984). Finally, communication through technology influences work processes as employees have access to information that may, in the past, have been the special province of managers. Boiney (1998) developed a framework for examining the relationship between group support system tools and the group's characteristics, pointing
out that efforts to redesign the business process "are increasingly supported by computer-based information technologies" (p. 1). Managers, then, need the skills to negotiate a workforce that will increasingly communicate through these technologies.

Smith (1997) saw in leadership and management a system that links together "human, social and organizational elements and relationships with functional and technical elements and relationships" (p. 1). Using a dynamic systems view, he held that leadership—or managerial competency—is a socio-technical system that is constantly evolving, highlighting the need for basic skills among leaders of organizations. Those skills demand an understanding of the role of technology, while complementing it with an appreciation for and a mastery of human relationships. Smith saw learning leaders as instrumental in helping individuals and groups to innovate, cooperate, and coordinate their efforts. Those relationship skills are based most completely on the communication ability of the leader, including verbal and nonverbal skills and empathetic listening, often combined with technological understanding to employ information technologies.

Management of modern organizations, then, appears to demand deft integration of people, technology, and information (Pickett, 1998). Bringing together those disparate elements is the challenge facing the manager. Information is not shared in a vacuum, nor does the socio-technical system operate outside of some organizational context. Pickett emphasized the human element in learning organizations, stressing that organizations do not learn, but "it is people who learn" (p. 5). While acknowledging that technology both helps and challenges organizations and their leaders, he also highlighted the fact that competent workers and managers are the keys to organizational success. They, not
technology, offer the only sustainable competitive advantage. Managers have the obligation to identify and develop core competencies of the individuals who constitute the organization. Those competencies, argued Pickett, are the sum of the experiences, knowledge, skills, values, and attitudes that individuals bring to the organization. Once those competencies, or skills, are a part of the organization, relationships between and among the individuals may be forged for operational success. It is still the individual manager, however, who must balance those technological demands and abilities with the human element.

Gunn (1995) claimed that information technology has produced a paradigm shift in modern management systems. Using Toffler's (1980) three waves of technology, Gunn suggested that organizations today use information technology to emphasize cooperation, objective analysis, proactive strategies, and collaborative decision-making. As information is made available to more individuals within the organizational structure, managers who distribute information cautiously and parsimoniously may actually lose power and maintain a weakened position within the organization. Knowledge workers constitute human capital, and the relationship between manager and worker becomes one of collaborative equality. Teams allow workers to compensate for individual weaknesses within this third wave management, focusing on collective talent and participative management. Computer technology, Gunn argued, has caused organizations "to smash the pyramid structure through the elimination of bureaucratic positions" (p. 12).

Before information technologies can be of genuine help within organizations, however, managers need a serious understanding of human behavior. Some argue that
information technology could radically change the way organization's operate, an argument that Simon (1965) called "technological radicalism" (p. xi), while others conclude that a fundamental study of group characteristics is more helpful and ultimately more significant (Boiney, 1998). Technology, though, should not be viewed as peripheral to the modern organization but as integral to the group process. It is not something that can be studied as a discrete entity within the organization; it is woven into the very fabric of organizations today.

If managers need to become coaches to support their teams of workers, the organization itself needs to support the use of information technology. Claver, Llopis, Garcia, and Molina (1998) claimed that organizational culture is important in encouraging the effective use of new technologies, creating within the workforce an "innovative attitude" (p. 1) if that organization is to successfully integrate technologies into daily practice. While a number of studies analyzed the relationship between technology and human capital (Barlow & Burke, 1998; Gunn, 1995), Claver et al. saw the autonomy and initiative of organizational members as important to organizations that would encourage the use of new technology. Perhaps most vital to an organization's willingness to adopt and encourage use of information technology is the acceptance by senior management (Pinsonneault & Rivard, 1998). By modeling the use of those technologies, top executives may encourage their use by workers throughout the organization. Other aspects of a culture that might encourage adoption and use of information technologies include a predisposition for constant learning, a focus on the true value of technology, and a willingness to decentralize the organization's structure,
employing work groups and teams to solve problems and make decisions. Before an organization can emphasize technology, then, it needs to demonstrate a clear commitment to continuous innovation.

**Managers in Changing Organizational Structures**

For competitive growth and even survival, modern organizations must frequently alter their structure (Hammer & Champy, 1993). Mann (1998) described the evolution of organizations from an industrial age model of directives and instruction to today's knowledge-based organization. He pointed out that workers today bring greater knowledge and the independence to use that knowledge in the workplace. Consequently, managers' communication moves from instructing to conferring. During an earlier age, bureaucracies were suitable, even ideal structures, for directing and motivating workers and accomplishing tasks. Weber (1960) pointed out that in a bureaucracy the ordered system of office hierarchy and levels of management permit "the full development of the bureaucratic type, the office hierarchy [being] monocratically organized" (p. 65). Top managers in such organizations were "concerned in large part with the fine tuning of their bureaucratic machines" (Mintzberg, 1979, p. 321).

In the bureaucratic structure, the manager often rations information. As access to information has increased in more modern organizations, however, often through information technologies, the bureaucratic structure appears less appropriate. For example, Mann (1998) claimed that "the information deluge is creating a workforce of professionals, people whose essential value lies in knowledge" (p. 163). With that
knowledge comes a responsibility for workers often to make decisions on their own. Managers are more coaches than supervisors in such organizations (Hammer & Champy, 1993), and instead of a hierarchical structure as in the past, modern organizations are frequently restructured to include quality circles, self-directed teams, and empowered work groups. Communication in such structures will closely approximate Guetzkow and Simon's (1960) all-channel network, requiring managers to receive and send messages from and to all directions. In spite of an emphasis on self-management among these smaller groups, there is still an obligation for managers to harness the efforts of group members, to coordinate their efforts, and to manage their organizational behavior effectively (Francesco & Gold, 1998).

For managers to communicate effectively as a part of teams or groups, they need to share their information and receive feedback from all parts of the organization (Aquino & Reed, 1998). Oncken (1998) described communication as a chain-of-understanding that integrates all levels of organizations. In order to forge a chain-of-understanding, individuals need to speak the same organizational language. That refers broadly to two languages: (a) production and efficiency, and (b) motivation. The argument for a language of production and efficiency flows from many of the traditional functions of the manager: planning, organizing, directing, coordinating, and controlling (Robbins & Coulter, 1999). The language of motivation, on the other hand, involves individuals' desire for belonging, recognition, and security. For the purposes of this study, it is significant that Oncken suggested that leaders
simultaneously provide our superiors, colleagues, and staff members with the recommendations, guidance and direction embodied in Language of Production and Efficiency, and be an avenue whereby others enjoy the very human needs each of us have that are embodied in the Language of Motivation. (p. 3)

This flow of communication that is required of managers suggests the potential risk for information overload. With information coming in from and going out to superiors, colleagues, and staff members, potentially excessive amounts must be processed and acted upon.

Information technology might contribute to processing that information. Angus and Gallagher (1998) claimed that new computer software allows more effortless sharing of ideas and documents, brainstorming, scheduling work, and archiving results. All of this is done, they suggested, by filtering and organizing the large amount of information that is available. That filtering ability could help reduce information overload in managers, while still permitting everyone on the team to be aware of decisions made or pending. On the other hand, filtering could eliminate some information that is important to the manager’s complete understanding of a given issue.

Managers’ decisions and actions will often flow from organizational structure, immediate work groups, and competitive environments. In hierarchical structures, managers might more easily manage the flow of information, since it comes from a more limited number of informants and can be planned somewhat more accurately. With new, decentralized structures, however, managers face the challenge of processing and making sense of a deluge of information, often needing to interpret that information and
determine vital points on which they need to act. Malan and Kriger (1998) highlighted the effective manager's ability, developed over time, to distinguish between different inputs and to assess the relative salience of events. While continually interacting with people and amassing clues about the environment, managers may demonstrate a wisdom that is based solely on their ability to perceive competitive advantage. In fact, Malan and Kriger defined managers as those who act as dynamic interpreters of their environment. The obvious risk, though, is that they may suffer from the "near-deafening noise of inputs from their own organizations" (p. 5), hindering their ability to process the information adequately. That seems to suggest the danger of information overload, and it could be exacerbated by information technologies such as e-mail. Such technologies may facilitate increasingly large amounts of information to be shared with managers, often with the expectation that the manager will respond to or act on the information.

As cited in Lee (1997), Bennis expressed a somewhat more sanguine view of the contributions of technology to the art of group management, particularly in its contributions to group affect. Bennis recognized certain dangers of alienation that could result from technology, while acknowledging that within groups, "intimacy and collaboration can be augmented and enhanced and maybe speeded up with e-mail" (p. 35). The place of information technology in the organization and its impact on managers is a reality in modern organizations, and that reality has led one observer to suggest a paradigm shift for managers (Gunn, 1995). Whether or not information technology has created a paradigm shift, it does appear to have created some significant changes in how
managers operate. That technology, and specifically e-mail, needs to be understood in some detail in order to appreciate its role in managerial overload.

E-Mail as an Information Technology

Managers at all levels in modern organizations, then, require unique skills that allow them to integrate and coordinate the activities of others. Those skills include communication and information processing skills (Hamilton, 1993; March & Simon, 1993), increasingly essential to survival within an information society (Bentley, 1998). A major channel for delivering that information today is through information technologies, including the Internet, intranets, facsimile machines, and e-mail (Reuters, 1998). These technologies are significantly influencing the modern organization, its structure, and the people who manage that organization (Morgan, 1997).

Much of the current literature emphasizes the growth of e-mail and other information technologies in organizations, using terms such as “rapid” (Gunn, 1995; Morgan, 1997), “significant” (Mann, 1998), “explosive” (Lacy, 1996; Rule & Keown, 1998), “fantastic” (Morgan, 1988), and even “revolutionary” (American Management Association, 1997; Barlow & Burke, 1998). While one study of over 1,000 executives found that 71% of managers use the Internet on a regular basis today (Reuters, 1998), the American Management Association (1997) pointed out that 90% of systems and administrative managers make some use of that key technology in modern organizations. The conclusion seems to be that information technology is a reality in most organizations. To comprehend the role of e-mail on information overload, it is important to recognize
some general aspects of information technology and specific aspects of e-mail as one important information technology. In addition, it is helpful to understand the place of information technology in modern organizational structures.

With the rapid growth of e-mail, it is encouraging that serious research is beginning to emerge exploring this new technology. There are numerous aspects of e-mail, however, that still need study. Of interest is the lack of a consistently accepted definition of e-mail at the present time. Some earlier works attempted to define the new technology (Caswell, 1988; Vervest, 1985). Perhaps the fact that so few recent works even attempt to define e-mail is testimony to its acceptance by a large percentage of the public.

Vervest's (1985) definition of e-mail was as follows: "Electronic mail is the electronic, one-dimensional transfer of information in the form of a message, via an intermediate (tele-) communication system, from an identified sending party to one or more identified receiving parties" (p. 15). This definition appears to be limited to text-only information, although Vervest elaborated later in his work that a message may include text, data, images, and voice. A more precise definition was Caswell's (1988): "Electronic mail is the generic name for non-interactive communication of text, data, image, or voice messages between a sender and designated recipients by systems utilizing telecommunications links" (p. 2). Most works from the 1990s that dealt with e-mail did not attempt to define the technology (Alesandrini, 1992; Angell & Heslop, 1994; Overly, 1999).
Both Kiesler (1997) and Stone (1997) dramatized the spread of information technologies, describing the growth of the Internet, for example, from “a small community of [United States] defense scientists and engineers to the larger university community” (Stone, p. 188) and then to business and other professional organizations. With that growth, though, there are important social issues that need to be considered. According to de Moor (1996), those issues need to be tackled not by information scientists but by social scientists and those who use these information technologies.

Because of the growth of information technology, its effects on managers could be consequential. Information technology’s relationship to management is explored in this section, as is its relationship to organizational structure and stress, to see if there are hints about how some people might resist using these technologies. The role of gender and its relationship to information technology is also considered. Finally, e-mail as an important information technology will be surveyed, highlighting its rapid growth in the organizational setting, its advantages and disadvantages over other methods of communication, and the place of policies to regulate its use.

**Information Technology and Management**

The effects of information technology and its influence on middle management have been explored in numerous studies (Buckholtz, 1995; Naisbitt & Aburdene, 1985). Middle managers are defined as those individuals “below the level of the organization’s apex but not including first line supervisors without a managerial career path within the organization” (Fenton-O’Creevy, 1996). Middle managers have often been used to
monitor and disseminate information (Beck, 1999; Buckholtz; Mintzberg, 1973),
activities that are increasingly handled by information technologies. At the moment,
however, studies regarding middle management and its relationship to new technologies
remain inconclusive. For example, based on in-depth interviews with 59 middle
managers, Pinsonneault and Rivard (1998) found that middle managers are still expected
by senior executives to fulfill informational roles, amassing, synthesizing, and
disseminating information from workers and thus leaving other dimensions of their work
unfinished. Ironically, many of those informational functions can be performed by
information technology today, empowering workers to make and implement decisions,
helping to redefine organizational culture, and possibly reengineering managerial roles
(Champy, 1995). The challenge could be for senior executives to recognize that fact.
According to Pinsonneault and Rivard, the relationship between information technology
and managerial work remains fundamentally dependent on the context in which senior
executives permit technology to be implemented and used within the organization.

While information technology may permit greater availability of information, it
may not offer equal ability to process that information (Katz & Kahn, 1978). Naisbitt
and Aburdene (1985) commented on the abundance of information available to managers
through information technology, but observed that managers often do not possess the
thinking ability to use that information effectively.

Park (1998) agreed that knowledge workers in modern organizations “are stuck
somewhere between data and information, with a long way to go before they achieve full
understanding and knowledge, and only a slight chance of attaining wisdom anytime in
the near future” (p. 2). In her examination of the relationship between information, knowledge, and wisdom, Park questioned whether adequate conceptual tools can be developed in time to avoid the “great floods of information coming our way” (p. 255). Shenk (1997) saw a similar problem in the “dichotomy between data and knowledge, between publicly available information and public understanding” (p. 67). Information technology has the potential to make information accessible to large numbers within the organization, including managers, and yet that information still needs to be manipulated to generate usable knowledge. Hofstetter, Sticht, and Hofstetter (1999) examined how information technology contributes to knowledge, holding that knowledge continues to be a consistent predictor of both social and political power. Access to information alone, they argued, is not sufficient to generate real power in organizations. Rather, workers—or managers—require information-processing skills they called literacy. Possessing genuine literacy enhances the power of individuals within organizations to make effective decisions based on their acquired knowledge.

Managers serve as “dynamic interpreters of their environments” (Malan & Kriger, 1998), in which they are expected to process the flood of information made available through technology, construct some meaning based on that information, and then act on their newly-constructed knowledge. It appears, then, that managers face an increasing amount of input through information technology and increasing challenges to filter that input into usable information. The implications of that observation are important to this study. As technology such as e-mail makes large amounts of information readily available to the manager, the possibility of dysfunctional overload may become greater.
According to Ponelis and Faiser-Wessels (1998), information technology has opened the floodgates to "increasing amounts of information [that] are being generated but without the corresponding increase in the ability to manage, interpret, and act on relevant information, resulting in an information overload" (p. 1). They argued that balancing the technology-centered and people-centered approaches to management may be especially important to organizations in the 21st century. Angus and Patel (1998) agreed that knowledge management is not a technology but a cosmology that is achievable through technology and human intervention working together. The challenge for the manager is to find that balance, leading to what Kanner (1998) described as "technological wisdom" (p. 9), a relational theory that uses technology without deifying it (Postman, 1992) and that acknowledges technological stress without succumbing to it. That relational theory has significance for the structure that is often found in modern organizations.

**Information Technology and Organizational Structure**

Organizations are changing as a result of information technology (Short, Williams, & Christie, 1976; Sproull & Kiesler, 1991/1995). It would be a mistake, though, to focus undue attention on the technology itself, for technology merely allows other changes to take place. According to Kiesler (1997), recent experiments in information technology have demonstrated the presence of both a cultural phenomenon and perhaps a significant cultural shift. Individuals in organizations may still exert influence on others, exhibiting power by the information and knowledge they possess.
Information technology has resulted in a flattening of hierarchies as top managers have access to information formerly the domain of middle managers (Bentley, 1998; Naisbitt & Aburdene, 1985). That arrangement also allows workers greater access to top managers, also through information technology.

Two additional changes in organizational structure made possible through information technology are geographic dispersion of organizations and the small team concept. Physical proximity is no longer essential to the conduct of business. Workers may be geographically dispersed while continuing to pursue the organization’s goals. It is the ability of information technology to support, monitor, and regulate work that enables some types of labor to be performed at locations isolated from the typical work setting (Scott, 1998). The organizations represented in this study are international, with headquarters or satellite offices in overseas locations. That geographic dispersion highlights the value of information technology for fast, efficient communication. While managers may be part of the small team model in their locale, they must simultaneously respond to the needs and demands of higher-level management and external customers and clients, often at great distances from the manager.

Extensive social science research has been conducted on information technology and organizational change (Sproull & Kiesler, 1991/1995), highlighting geographic dispersion and the small group model as realities in modern organizations. Sproull and Kiesler studied the role of managers in both shaping a vision of a new communications environment and designing policies to carry out that vision. They found that information technology leads to two levels of change in organizations. First-level efficiency change
is technological, whereby hardware and software may be introduced into the organization to achieve efficiencies. On the other hand, information technology may also lead to significant second-level social effects that touch the human sphere. At second-level change, the social system is affected in sometimes dramatic ways. It goes beyond simple geographic dispersion or small team cooperation, resulting in networked organizations. These organizations are built upon four principles:

1. Everyone communicates by way of the network.
2. Everyone has open access to both information and people in the organization.
3. Everyone has the freedom to use whatever communication forum is most appropriate to them and their work.
4. Organizations need to create policies and incentives to encourage information exchange.

This networked organization challenges some traditional concepts of managerial functions, but it does not appear to diminish them significantly. For example, the traditional meeting as a place for planning and setting goals and objectives is being transformed. In addition, the controlling function that seeks to monitor all work activities may be difficult because of the high volume of information available through technology. Nevertheless, those functions still maintain their importance, as may Mintzberg’s (1973) interpersonal, informational, and decisional roles of the manager.
Information Technology and Stress

Among second-level social effects in organizations (Sproull & Kiesler, 1991/1995) is occasionally a phobia toward technology. Perhaps the opposite of Postman's (1992) technopoly, or deification of technology, is technophobia (Scott & Rockwell, 1997). Based on surveys of 178 undergraduates, Scott and Rockwell concluded that 55% of Americans suffer some anxiety caused by computers or computer technologies. These results may be significant, since students have often been found to enjoy greater familiarity with new technologies than older working adults (Brosnan & Davidson, 1994). In fact, Festervand and Meinert's (1994) research concluded that older Americans have significantly greater concern about the complexity and operation of computers than do younger individuals. There seems to be a correlation between technology apprehension or resistance and the likelihood to use information technologies in the workplace. That fact could be important to the future success of individuals who suffer from technology anxiety. Scott and Rockwell concluded that individuals suffering from such anxiety often choose not to use a computer when given the opportunity. Such individuals might not be permitted to grow within the networked organization unless and until they become more comfortable with information technology. That significant issue was explored in this study, especially how a manager's resistance to information technology might influence the experience of information overload.

DeFrank and Ivancevich (1998) acknowledged the presence of stress in virtually every professional environment, arguing that it will remain a major issue facing managers
well into the next century. They defined stress as “an adaptive response, moderated by individual differences, that is a consequence of any action, situation, or event, that places special demands on a person” (p. 2). Among the unique sources of stress in modern organizations is the flood of information that has inundated managers, often leading to information overload. Specifically, they addressed the rapid growth of technology, such as e-mail, as the source of much stress in those managers. Consequently, managers must deal not only with stress as a presence among the workforce but also as a potential reality within themselves.

Goldberg (1998) agreed that stress from technology is not only a reality in organizations, but also a threat to everyone’s sense of security as it creates anxiety among the workforce. He rehearsed some positive effects of new technologies, while arguing that many of the changes they bring on may lead to great uncertainty among workers. That uncertainty could in turn create anxiety. As e-mail and other technologies advance throughout organizational life, widespread stress among the workforce could result.

Stress, as the direct result of information technology, is one of the dominant concerns in organizations today (Arnetz, 1997). Termed technostress because of the unique cause of the phenomenon, that stress has led to numerous physiological complaints, to include repetitive strain injuries, eye discomfort, and headache. Perhaps more insidious are the psychophysiological and psychosocial consequences of a poor fit between the technology and the human operator. In a simple longitudinal study that measured stress reduction training, Arnetz concluded that social support at work is important in attenuating technostress.
That same concern for the human element informed Brod’s (1984) significant work on technostress. Acknowledging that information technology cannot be avoided, Brod emphasized the interface between humans and technology. An understanding approach to technology, in which managers balance the relationship between the human and technology, seems the best course (Boiney, 1998; Cole & Conlon, 1994; Gunn, 1995). According to Brod, senior managers may be especially resistant to the use of computer technology, largely because they have not developed the requisite computer skills necessary to feel comfortable with that technology. That argument may become increasingly outdated, as more managers work consistently with information technology. However, whether managers are especially resistant to computer technology may need to be shown through empirical research. Moreover, Brod suggested that because the informational roles of middle managers may be redundant as the result of information technology, managers could be especially anxious victims of technostress.

Ironically, both Singh (1998) and DeFrank and Ivancevich (1998) claimed that technostress may be not only unavoidable but also actually beneficial. At moderate levels it could motivate workers to take prudent risks, to enhance their knowledge, and to become more involved in their tasks. The difficulty, though, is that stress is individuated, that is, it results from individual responses to situations. What may cause moderate, and therefore motivating, stress in one individual could be emotionally crippling in another. Moreover, as stress becomes more a part of everyday organizational life (Albrecht, 1979), it may have a cumulative effect that could lead to dysfunctional attitudes and behavior among workers and managers.
Since information technology such as e-mail is becoming indispensable within corporate settings (Mann, 1998; Maurer & Simonson, 1994; Witherspoon, 1997), managers need to recognize and handle the stress that may accompany that technology. Moreover, those managers must deal with an increasingly diverse workforce (Murphy et al., 1997), one that includes large numbers of women. An important issue that this study explored was how gender may influence information overload from e-mail.

**Information Technology and Gender**

Because men and women appear to communicate differently (Tannen, 1990, 1994; Winter & Huff, 1996), their use of information technologies might also be different. It is conceivable that using e-mail or other Internet communications tools could result in more equal exchange between men and women. Yet Winter and Huff’s extensive study of women computer scientists concluded that women perceive such electronic communication as male-dominated. The culture of the Internet, those women believe, reflects a male society. Consequently, women complain that the electronic culture is “unfriendly, unsupportive, and at times, even hostile” (p. 16). These findings create a complex potential source of stress among women in organizational settings.

The issue of information technology and gender may be significant in whether men and women are equally prepared to employ technologies such as e-mail inside organizations. In their research with undergraduate students, Scott and Rockwell (1997) found minimal gender differences in their response to computers, although findings in this area are also inconclusive and at times contradictory. Other studies that examined
gender differences in attitudes toward and use of information technology (Cole & Conlon, 1994; Harrison, Rainer, & Hochwarter, 1997) provided some insight into individuals’ willingness to adopt and use different information technologies. Harrison et al. concluded that men are more proficient than women in their use of computers, suggesting that women could thereby face a significant barrier in professional growth. Moreover, Cole and Conlon found a male-bias in education that might cause men to be more attracted to technology than might women. Their research found that much of the school curriculum denies women access to computers, emphasizes technology over the human element, and is taught by teachers who are often insensitive to women’s issues. They recommended that educators emphasize “sociological approaches to the study of computing [that] could . . . increase the subject’s attractiveness to females” (p. 6).

To date, however, two major problems have attended many of these studies of information technology and gender. First, much of the research has been conducted in school settings among high school or undergraduate students. Significant differences might exist between information technology users in professional organizations and those in schools, limiting the studies’ usefulness in the organizational setting. Second, much of the research has relied heavily on surveys or testing inventories (Ayersman & Reed, 1996), which might be valid but fail to develop the findings qualitatively. The value of in-depth interviews and focus groups could add to the social understanding of such research.

Contrary to the findings of Scott and Rockwell (1997), Sacks and Bellisimo (1994) found that men have generally more positive attitudes towards computers and use
computers more than do women. Moreover, their research supported the role that experience plays in attitudes towards computers and technology. Both men and women have more positive attitudes towards computers if they have experience working with them. This finding is consistent with a number of other studies (Ayersman & Reed, 1996; Festervand & Meinert, 1994; Miller, 1996; Scott & Rockwell, 1997) that have highlighted the importance of computer experience as a predictor of positive attitude toward and use of that technology. Sacks and Bellisimo found little or no difference between men and women in their use of computers for word processing. That is significant for this study, since it looked at the use of computers as a communications medium. Koch (1994) reached a similar conclusion: women may prefer using computers for purposes such as word processing rather than for math or science. Where men appreciate the power, speed, and technological advances of the computer, he argued, women admire the computer's ability to connect people, improve communication and collaboration, and integrate both their public and private lives. Weinman and Haag (1999) spoke of the themes of communication, collaboration, and integration that women find in their use of computer technology, but their research found an "alarming technological divide" (p. 1) between men and women in their approaches to that technology.

Men were found to possess a greater ability to use computers (Miller, 1996) in a study that is significant because the subjects were junior and senior business administration students, many of whom might be expected to enter the managerial ranks. The women in that study exhibited greater anxiety about computers, more negative
attitudes, diminished expectations of outcomes, and less desire to use computers. Those results appear alarming as computer competency becomes a prerequisite for success in many organizations (Harrison et al., 1997).

Cyert and Mowery (1987) were cautiously optimistic in their estimate of opportunities for women to be hired and promoted within the workforce. They concluded that women do not appear to face a bleak future as the result of technology. In fact, with growing educational opportunities open to women, they could be better prepared to enter and succeed in the workforce. As small team structures become dominant within organizations (Gunn, 1995), communication may help build intimacy and relationships, that in turn may be vital to the success of the enterprise (Ouchi, 1981). Female managers might find the interaction with others, through information technology or through face to face interaction, satisfying and helpful to their personal and professional goals. Finally, as information technology enhances access to information on which knowledge can be formed and wisdom demonstrated, women may also find increasing access to an organization’s power structure (Allen & Griffeth, 1997). As managers using e-mail, do women experience information overload any differently from men? This study explored that question.

E-Mail as Information Technology

E-mail as an information technology is influencing modern organizations in several significant ways. It is one of the fastest growing communications technologies in human history (Caswell, 1988), and its growth rate shows little sign of slowing.
According to one survey by the Institute for the Future (1998), the use of e-mail to communicate messages is the second most frequently used, behind the telephone. Another survey of 317 employees placed e-mail second behind the fax among information technologies (Hartman & Nantz, 1996). Finally, a survey by the American Management Association (1998) was even more dramatic. While most of the 407 respondents to a survey preferred face-to-face meetings, the most frequently used means of communication in organizations was e-mail. Some 36% of all messages are sent by e-mail, that survey found, as opposed to 26% by telephone, the second most used communication method.

E-mail is today perhaps the most frequently used communications medium in modern organizations (American Management Association, 1998). A review of the literature considers its history and reasons for its rapid growth, some advantages and disadvantages of e-mail, and the value and risks of imposing policies on the use of e-mail in the professional organization.

**History and Growth of E-Mail**

While at least one researcher has seen the origins of electronic mail as early as Morse’s telegraph in 1844 (Caswell, 1988), most acknowledge the beginning of modern e-mail in the 1960s (Murphy et al., 1997). Because of concerns for uninterrupted communication in case of attack, the Department of Defense created what would become the Internet. The first network was the ARPANET, established by the military’s Advanced Research Projects Agency (ARPA) in 1968 to handle communications
between computer terminals and host computers (Caswell; Stone, 1997). A number of universities joined in the growth of the new network, largely because of defense work that they were accomplishing. According to Caswell, the birth of e-mail was in 1971, when an ARPA engineer sent himself a message using the network. Within a year, a file transfer protocol was designed to transmit program and data files, and soon, software was being created to permit deleting, message forwarding, reply to sender, and other e-mail functions.

Rose and Strom (1998) pointed to 1982 as the birthdate of Internet e-mail as it is known today. The recent significant growth of e-mail, though, is the result of the personal computer, for without easy access to computers, e-mail use would perhaps still be confined to defense analysts and university planners. In a sign of the rapid growth of this medium, Caswell (1988) commented little more than a decade ago, “Despite the almost natural tendency for PCs to function as electronic mail devices, most PCs still largely function as stand-alone devices within their offices” (p. 43). In fact, most organizational personal computers today are linked to one another through the Internet (Overly, 1999), and that fact partly explains the expansion of e-mail, since so many PCs now have access to Internet e-mail.

In fact, the Internet and e-mail are intertwined, leading to the observation that “the phenomenal growth of the Internet has been largely due to the growth and popularity of email usage over this past decade. Email is still the Internet’s most popular application” (Rose & Strom, 1998). Popular media are beginning to probe this phenomenon as well. National Public Radio (NPR), in a recent series on e-mail, reported, “The number of
people using e-mail at work has been growing recently at the rate of 20% a year. By one
estimate, almost 100 million Americans now send more than three billion e-mail
messages every month” (Molpus, 1999). That growth is in part due to the ease of sharing
information and collaborating with others both inside and outside organizations.
Moreover, according to NPR, some consider e-mail more reliable than the telephone and
more convenient than face-to-face meetings. Other advantages help to underscore e-
mail’s growth and popularity. However, there are also disadvantages that constitute a
“potential horror” (Kestenbaum, 1999), including the possibility of information overload.

Advantages and Disadvantages of E-Mail

The advantages of e-mail over some other forms of communication, to include
other information technologies, help to explain its popularity and growth in professional
settings. Unlike the telephone or face-to-face communication, for example, e-mail allows
the sender to plan, compose, edit, and revise a message before sending it (Murphy et al.,
1997). E-mail systems keep a record of messages sent, and many programs allow the
sender to include a message priority and obtain a return receipt to ensure that the message
did get to its intended destination. Archival records of messages sent can be especially
helpful when engaging in ongoing correspondence that may extend over periods of days
or weeks (Whittaker & Sidner, 1997). Additionally, e-mail allows inexpensive
transmission of the same message to a group of individuals in a single step. Among the
most attractive benefits from the use of e-mail is the ability to send attachments with the
message, including text documents, spreadsheets, PowerPoint presentations, still photos,
audio, and video images. Managers who travel have immediate and easy access to information wherever they may be located. Martin (1993) claimed, “Thanks to electronic mail, memos can be sent to you while you’re traveling and be waiting for you when you arrive” (p. 167). Lastly, e-mail is asynchronous, meaning that receivers can read or listen to the message whenever it is convenient, making the technology less intrusive than telephone calls (Bardsley & Shultz, 1996).

In a study of collaborative writing, Woods et al. (1998) analyzed distributed teamwork and the benefits of e-mail in communicating with other writers. They suggested that e-mail provides a more streamlined and efficient method of collaborating than face-to-face meetings. The medium allows individuals to concentrate on the matter at hand without outside disruption and to work as succinctly and lucidly as possible. Additionally, writing collaboratively while geographically dispersed might provide support and reduce stress on the individual writer. Within many organizations, that distributed style of teamwork is often known as peripherality (Kraut & Attewell, 1997). Employees who are at the periphery of an organization frequently suffer from communication deprivation and may thus be less committed to that organization. Since being peripheral in an organization could have both sociological and geographical dimensions, e-mail might be particularly well suited to increasing communication, enhancing commitment, and reducing alienation from peripherality. Conducting surveys of 973 employees in a multinational organization, ensuring that many were at its periphery, Kraut and Attewell found that organizational knowledge is enhanced through the use of e-mail, as is organizational commitment. E-mail messages are perceived as
especially valuable in keeping up with organizational information, and they are less intrusive because of e-mail's asynchronous nature.

In addition to being asynchronous, e-mail may reduce the communications cycle and save time, especially important in many competitive business Organizations. Among some indirect benefits of e-mail are its ability to reduce telephone tag, improve the span of control over subordinates' activities, increase knowledge of organizational and peer activities, generate greater group interaction and decision making, and lead to better time management (Caswell, 1988).

Hartman and Nantz (1996) found in their studies that the top three advantages of e-mail are communication speed, simultaneous distribution, and paper reduction. They went on to outline no fewer than 22 specific advantages of e-mail, including greater productivity, enhanced document sharing, improved morale, and time and cost savings. On the other hand, they cited 27 drawbacks to this information technology that should be recognized. The top three disadvantages found in their survey of 317 organizational employees were increased message load, increased numbers of errors, and lack of security. Among other disadvantages were user resistance, rudeness or discourtesy, poor feedback, and reduced personal interaction.

Kanner (1998) likewise warned of diminished personal interaction, arguing that e-mail removes the physical context and diminishes spontaneity. He suggested that managers develop a relational theory of technology he calls technological wisdom. It is important, he contended, to recognize that people and technology must coexist. Because of the ability to communicate through e-mail at a distance, people may socialize less in
culturally mixed groups, leading to decreased diversity. If Kanner's view is unduly pessimistic, his premise appears valid. This was Hallowell's (1999) finding, leading to his warning about the need for the human moment. Such personal contact, Hallowell found, stimulates mental activity and allows more creative thinking.

Other disadvantages of e-mail include its perceived unreliability; lack of privacy and security; growth of spam, that is, unsolicited—or junk—e-mail; and its occasional lack of compatibility with other systems (Bardsley & Shultz, 1996). In addition, it may be argued that reading and responding to e-mail can become compulsive. The fact that an individual can receive e-mail anywhere leads some to behave as though they must read their mail, whether at the desk or away from the office. “E-mail can disrupt our carefully constructed and delicately balanced working routines and coping mechanisms. One colleague reported how, on returning from a spell of study leave, he found over 500 e-mail messages on his computer” (Woods et al., 1998). That kind of information overload may be among the most serious potential disadvantages of e-mail. This phenomenon could be especially challenging to the manager, because e-mail “indiscriminately records the profound and the trivial in enormous volume” (Kestenbaum, 1999).

A number of studies point to information overload as a consequence of using e-mail (Alesandrini, 1992; Rose & Strom, 1998; Verespej, 1995b). Whittaker and Sidner (1997), for example, recognized that “the success and popularity of e-mail has led to high daily volumes of e-mail being sent and received” (p. 278), emphasizing the experience of overload in some recipients of those messages. On the other hand, Kraut and Attewell (1997) cited a variant finding. In their research, they found that e-mail does increase the
amount of information individuals receive, but it does not necessarily increase their psychological experience of being overloaded. Nevertheless, such volumes of e-mail have led some organizations to give serious consideration to establishing policies on the proper use of e-mail.

E-Mail Policies

Overly (1999) pointed out that one fourth of all organizations have written policies for the proper use of e-mail. That number is greater than the 10% cited by Reuters (1998) or the 18% claimed by Posch (1996), although less than the 36% cited in a survey by the Society for Human Resource Management (Greengard, 1996). In spite of the limited numbers of organizations that have established such policies, Overly argued that policies could be critical to organizational survival for preventing waste of important organizational resources. Rehearsing many of the benefits and limitations of e-mail, he recommended that “businesses should take steps to ensure that their employees use e-mail appropriately and professionally. One step is to create a formal e-mail policy that specifically defines the obligations and duties of every e-mail user” (p. 16). One of Overly’s chief recommendations was that organizations adopt a written policy to educate employees on the proper use of the computer—to include their e-mail activity—and to install appropriate monitoring and filtering software “to prevent access to inappropriate content and to identify problem employees” (p. 87). Such measures sound draconian. If policies are to be considered by an organization, managers should weigh seriously the potentially adverse effects of such surveillance measures.
Hartman and Nantz (1996) offered a somewhat more balanced look at the issue of communications policies, arguing the importance of protecting all parties. Unlike the severe approach that Overly (1999) took, their recommendation was that a workable policy recognize and create a balance between the organization's and the employee's rights and responsibilities. Every policy should include, as a minimum, the stated limits of the organization's privacy policy, a warning that employee e-mail is subject to examination, and a statement as to who will monitor the e-mail server (Hartman & Nantz; Posch, 1996). In addition, e-mail policy should include information about how monitoring incidents will be communicated and some assurance about the confidentiality of personal information.

E-mail policies reflect the organization's culture and may be either lenient or restrictive. A lenient policy attempts to set general e-mail boundaries but does not attempt to restrict or monitor user messages. A restrictive policy tends to curtail employee personal e-mail messages and focuses on e-mail as a business tool. A restrictive policy may also specify how employees will be punished if e-mail guidelines are not followed. (Hartman & Nantz, p. 57)

Acknowledging the benefits of stating clearly what is expected of employees, one might question overly restrictive policies that specify punishment. Moreover, stating the punishment unequivocally might give the manager little room for personal judgment of the situation and the employee.

One case study on e-mail policy concluded that while policies may seem necessary, they could become counterproductive (Hacker et al., 1998). Pointing out the
suspicions that managers may have about employees' using e-mail for personal purposes and that employees may have about managers' monitoring their e-mail behaviors, Hacker et al. found that employees do not support the establishment of formal e-mail policies. In addition, there is a real possibility that restrictive policies could adversely affect worker morale and therefore diminish productivity. In a study of university library workers, including interviews, focus groups, and surveys, Hacker et al. concluded that informal policies may be most helpful to the organization and its members. Pursuing the balance recommended by Hartman and Nantz (1996) and Posch (1996), they found that a lack of e-mail policy may not ensure that the technology is being used effectively. On the other hand, since e-mail often reduces uncertainty and enhances productivity, overly restrictive policies could harm that activity. Certainly if a policy is instituted, it may be wise to involve employees and solicit their input.

Reuters (1998) found that only 1 in 10 organizations has a written information management policy and that half had no plans to implement one. Perhaps those organizations believed that employees would find policies onerous and would reject them. On the other hand, more than a third of respondents in a major study of over 1,000 managers claimed that introducing an e-mail policy could be among the most useful developments for dealing with one major e-mail problem—information overload (Reuters). The difference between managers' views and employees' views may be highlighted by the fact that 90% of managers in that study said that policies would lead to better and more informed decision making. A large majority also claimed that such policies would lead to greater productivity and higher levels of job satisfaction. Whether
or not e-mail policy would eliminate or significantly reduce information overload caused or exacerbated by e-mail. Overload does appear to be a reality in many organizations today.

Information Overload

In much of the current literature, the flood analogy is used extensively to describe information overload. Modern organizations are said to be awash and perhaps even drowning in a deluge of information. According to Mann (1998), society is constantly receiving torrents of information, more than it can absorb, and individuals are being overwhelmed by feelings of disorientation and intellectual paralysis, and in some extreme cases, may exhibit violence. In order to survive the glut of information, individuals may close down their senses. Organizational managers are occasionally kept from making decisions, not because they cannot get enough information but because they have so much. Mann argued that for some decision-makers, information has become a substitute for understanding, and reason has become swamped in a sea of facts. “Executives are afraid to make decisions before they consider all the information, while all the information is now too much to consider” (p. 27). Information overload seems to be a societal and organizational problem that demands serious study.

It appears that with increasing amounts of information inundating the manager, it could be increasingly difficult to find the really valuable and necessary information. If, as Kestenbaum (1999) suggested, e-mail “indiscriminately records the profound and the
trivial in enormous volume," the ability to search for the critical among a glut of information could be a serious test of managerial skill.

De Moor (1996) argued that it is difficult to determine the quality of information, largely because of what he terms "information chaos" (p. 3). He claimed that information technologies contribute to the situation by creating, collecting, and distributing information in an exceptionally efficient manner. Unfortunately, that efficiency has led to one of the more pressing problems caused by modern information technology, information overload. While computers are efficient, they are at present less capable of interpreting the value of that information than are human decision-makers. Moreover, human capacity for processing information is finite (Katz & Kahn, 1978), and when a person is subjected to too high a communication input load, his or her information processing efficiency has been found to decrease (Rader, 1979).

The problem of information overload is not new. Katz and Kahn (1978) addressed the issue without substantial change from their first edition of 1966. They defined information overload as "communication input greater than the organization or certain of its components can handle" (p. 450). Stuller (1996) defined this phenomenon as "being soaked in a surfeit of information" (p. 2), again reverting to the flood analogy. Bentley's (1998) definition of information overload was simplistic—having "too much information available" (p. 81). Hickson and Stacks (1998) failed to define the term, although they claimed that increased technology often creates information overload that may be expected to increase in the future. They did address one term—message overload—as "situations where the information comes faster than the human being can
comprehend, store, and act upon it” (p. 97). For Hickson and Stacks, then, the phenomenon took on an element of speed and the individual’s inability to process the information at the rate that it rushes in. Others have looked less at the rate of information input and dwell more on the quantity of input (Bentley; Katz & Kahn; Stuller). Each of these studies used slight variations in its definition of information overload, perhaps suggesting part of the difficulty in understanding this phenomenon. Since much of the excessive information input in modern organizations may be irrelevant or trivial, its value is diminished and it becomes noise (Klapp, 1986). That noise has decided effects on workers and their managers. Following is a review of overload and the manager, followed by the effects of information overload, the place of information technology in creating overload, and the specific phenomenon of e-mail and overload, with some concluding thoughts on the ongoing need for research.

Overload and the Manager

Evidence points to information overload as a global phenomenon. Reuters (1996, 1998) explored overload in the United States, the United Kingdom, and Asia, finding that more than half of all managers collect a great deal of information to use in decision-making. Almost that same number, however, admit that they are frequently unable to handle all the information they receive. In Australia, information overload is said to hamper managerial decision-making (Banaghan, 1996). Feeling overwhelmed by too much information, some managers believe that business is being strangled and that managers and workers are suffering both physical and mental stress as a result.
Banaghan suggested that information overload in managers became exacerbated in the 1980s, when information technologies became prevalent in organizations. Recognizing the reality of those technologies, she argued that the solution is for managers to become more critical of the quality of information received. That may point to designing some communications policy as a means of controlling the flow of information within the organization.

Another study that highlights the global nature of information overload explored decision making within the Israeli Air Force (Ahituv, Igbaria, & Sella, 1998). Using an experimental approach, the researchers studied the entire top echelon of that organization, including top and mid-level commanders, equivalent to senior and middle managers. Through 74 simulations, the researchers gave either complete or incomplete information for decision making, and then controlled for the time in which a decision had to be made. Their findings offer valuable insight into the phenomenon. While complete information did improve performance, the difference was not statistically significant. Moreover, time pressure usually, but not always, impaired performance. Inexperienced commanders were especially prone to needing more time to make quality decisions. Experienced commanders, on the other hand, used their experience to offset missing information and limited time. Experience, then, appears to be an important factor in how much an individual manager may suffer from overload.

Experience is similarly important in determining how individuals perceive, categorize, and respond to information (Ahituv et al., 1998; Bernays & Wcislo, 1994). Specifically, the time to make quality decisions increases as choices are added. Bernays
and Wcislo’s experimental work with mammals could contribute to a richer understanding of this phenomenon in humans. They found that only a finite subset of simultaneously occurring events or information can capture one’s attention at any one time, that the ability to perceive and process large quantities of sensory information is limited. Studying the animal kingdom, they concluded that perceptual filtering may be necessary to make critical decisions. In other words, inefficient behavior could result from an overload of information. How that filtering is accomplished is important and yet at present not understood satisfactorily.

Decision-making must often be accomplished in modern organizations in the presence of a surfeit of information. When managers are expected to determine strategy or make other key decisions, they need to assess where and how the organization secures information (Cyert & March, 1992). The quality of information input affects the quality of the decision. Frequently, however, strategies and decisions must be made in an environment of ambiguity and uncertainty. This ambiguity is part of Simon’s (1945/1976) bounded rationality, in which the individual acknowledges his or her limited information, knowledge, skill, or time. Based on that limitation, managers construct simplified models that seek to capture the main features of a problem without capturing all of its complexities. Those managers then, attempt to act rationally within the bounds of the simplified model. Largely because of excessive information, often provided through information technologies, managers’ cognitive abilities become taxed (Geletkanycz & Hambrick, 1997). Those organizational leaders are frequently called upon to make decisions rapidly before the information on which they base those
decisions becomes obsolete, challenging even experienced managers’ decision-making capacity.

Reilly (1998) addressed the specific role that technology may play in information overload. Conducting research with students, he discovered the difficulty that some have in processing large amounts of information at too fast a rate. The pace of instruction delivered by computer, he found, may contribute to overload. If complex information is introduced too quickly, students may be unable to process it, since they have limited channel capacity. Two important limitations of this study should be pointed out. First, while there may be freedom to control the flow of information to students in experimental settings, that same freedom rarely exists with managers in real organizations. Second, while technology is acknowledged as a tool “that can assist or hinder the learning process” (p. 9), Reilly failed to explore how that technology could be used to avoid overload, being content to argue that information should be meted out judiciously.

**Effects of Information Overload**

Miller’s (1960) seminal studies into information overload examined that phenomenon experimentally, exploring the individual’s and group’s response to overload. Miller found different adaptations that individuals or groups may use to deal with increasing amounts of information input. He found that subjects may engage in omission, that is, they temporarily cease to process information as input increases. Moreover, he found that performance decreases as the amount of information increases. Finally, he demonstrated the cost of overload as systems become saturated with
information and occasionally break down. Katz and Kahn (1978) criticized Miller’s failure to distinguish between adaptive, or coping, mechanisms and maladaptive, or disruptive, mechanisms. As they explained, failure to process information may keep a system from total breakdown, but it may not be the optimal method for handling overload. Their criticism is well founded, although their example is weak. Preventing a system breakdown is essential, and that fact must outweigh concerns over optimal methods for dealing with the phenomenon. Perhaps more important is Miller’s limited view of information. He admitted to being “concerned not with the value of information, but rather with the quantity of it” (p. 695). In real organizations, though, such as those in this study, information has both quantity and value. Moreover, Miller’s methodology permitted increasing “information” by speeding up an electronic metronome or by showing increasing numbers of movie frames. In modern organizations, information transmitted to managers is rarely so simplistic. While Miller’s findings demonstrate a clear understanding of information overload, there are other shortcomings, among which is a shallow discussion of stress caused by overload.

Stress as the result of information overload in professional settings is a real threat, although much of the incoming information may be either irrelevant or redundant (Bernays & Wcislo, 1994). Therefore, messages must be selected from among all that input. Miller (1960) spoke of the need to filter information as a means of responding to excessive input. Because all creatures have limited capacity to simultaneously process large quantities of incoming information, filtering is essential for survival. Otherwise, various dysfunctional behaviors may result from the information overload. Bernays and
Wcislo stopped short of attempting to quantify the amount of information that may constitute overload, although they suggested, like Miller, that quantity rather than value is the operative aspect of information overload. Davidson (1996) also sidestepped the issue of quantification by simply announcing that it is “harmful to ingest too much information at once” (p. 9), indicating that quantity and rate of information input may be most stressful.

Among the better known descriptions of information overload is Toffler’s (1970) work that acknowledged that researchers are unable at present to quantify overload. He did, however, state unequivocally two basic principles. First, humans have limited capacity to receive and process information, a finding reinforced by Rader (1979). Second, overloading the system—either an individual or other entity—will result in serious deterioration of performance. Victims of what Toffler called future shock may exhibit confusion, uncertainty, bewilderment, disorientation, self-doubt, anxiety, illness, fear, irritability, anger, or, in extreme cases, violence.

Exploring the social psychology of telecommunications, Short, Williams, and Christie (1976) found that new technologies could help make social contacts, but they might also contribute to separating individuals and causing breakdowns in affective relationships. Specifically, Short et al. found that overload caused by new technologies may cause restlessness, stress, agitation, and isolation. To that list, Rader (1979) added physical illness, such as blood serum changes, heart irregularity, and unsettled stomach.

Among the more dysfunctional effects of information overload in organizational managers could be the rush to make decisions without serious reflection on the quality of
the information available, a danger cited in several studies (de Moor, 1996; Rees, 1997; Stuller, 1996). Some other ill effects include elevated blood pressure, decreased benevolence, and occasional overconfidence (Shenk, 1997). A litany of psychological and sociological effects caused directly by information overload include shortened attention span, a reactive mode, analysis paralysis, warped perspective, and diminishing overall work quality (Reuters, 1996). McCune (1998) highlighted the problem of information fatigue syndrome on both individuals and organizations. Within organizations, for example, she claimed that information overload leads to wasted money, lower worker productivity, and devaluation of information. Where so much information is freely available, she argued, its value is sharply diminished. That availability has been found to lead some workers to spend excessive time on trivia while dismissing more vital information or failing to recognize its value in time (Alesandrini, 1992). In addition, excess information could cease to convey clear meaning and may become noise, an irony within an information society (Klapp, 1986).

**Information Technology and Overload**

The effects of information overload on individuals and organizations may be costly (McCune, 1998; Rader, 1979), and it appears that because of the volume of information that technologies can produce, information overload might be increasing (Landau, 1995; Lively, 1996). Several studies seem to support that conclusion (Reuters, 1996; 1998), although there is some confusion in recent research about information technology's role in information overload.
Meier (1973) looked specifically at the stress of information overload in urban settings, but his work is important in establishing two typical responses to or effects of overload. Arguing that information technologies are the cause of much of that stress, he found that frenetic activity often results from the overload of information generated from technologies. In turn, that activity could lead to worry and disease. Since managers are at the core of much communication flow, they may be uniquely vulnerable to those ill effects. They often have the ability to respond initially to an overabundance of messages by dealing with the most important first. Gradually, however, as the stress builds with increasing numbers and types of messages, those managers may seek to escape into vacations or illness.

Meier’s (1973) research is pessimistic, in that he failed to consider some important alternative solutions. First, the manager who is victim of information overload may find adaptive—as opposed to maladaptive—ways to handle the information overload. Illness is not an adaptive strategy; nor is retreat. Rather, managers could learn tools or techniques to manage the overload of information. This study sought to discover such tools or techniques. In addition, there might be a growing realism in the expectations of managers’ ability to deal with overload, and that realism could help inform some of the strategies for dealing with the ill effects of overload. In other words, as senior managers recognize the risks of information overload, they might be increasingly understanding of the quandary faced by overloaded junior managers. While these alternative solutions need additional study, they could signal a more positive response to information overload and its risks.
The threat is not the information technologies themselves, but the excessive amounts of information they can produce in a short period of time. De Moor (1996) lauded the way technology can help professionals create, collect, and transmit information. He noted especially distributed information technology, which is responsible for efficient collaboration among professionals. Such technology includes “data and software stored in more than one physical site and that use a computer network to establish the connections between these sites” (p. 1). Nevertheless, he too recognized that information technology might lead to information chaos because of the overwhelming amount of available information sources.

Organizations are not likely to neglect the power of that information brought by new technologies. Smith and Langan (1985) recognized years ago that dealing with information overload brought on by those technologies is a permanent aspect of managerial existence. Reducing managers’ work to a core essential, they claimed that work means coping with information. In particular, information management is the primary survival and advancement skill that can help managers “separate the important nuggets from the junk” (p. 24). While information technology permits managers to be better informed than ever before, they must master the ability to handle information effectively. Landau (1995) offered a similar picture of the potential risk from information technologies such as e-mail, voice mail, and fax. Where those technologies hold great promise for competitive advantage, the inundation of information could “defeat the original intent of making global information-sharing more efficient and international business operations more manageable” (p. 18). Landau suggested that
managers develop the skills to determine the appropriate tool for sending information, using either synchronous or asynchronous technology, that is, technology that demands both sender and receiver be available at the same time or not. Moreover, there are times when technology may be inappropriate for sending information. Hartman and Nantz (1995) reached a similar conclusion after surveying over 300 e-mail users. Landau's study focused more on sending information, though, and not on receiving and processing that information. While alluding to overload, Landau did not address how the individual manager can deal with overload that results from excessive incoming information.

While citing the enormous growth of new technology in the past decade, Alesandrini (1992) placed much of the blame for overload on paperwork. In particular, she recommended that managers convert to "electronic paper" (p. 60) as a solution to overload. That recommendation appears both unrealistic and shortsighted. Many studies recognize the danger of overload caused by the use of information technology. Instead of reducing overload, the ease of gathering and sending information through information technology could exacerbate the dysfunctional behaviors of overload. Often, persons employing those technologies might ignore information outright or continue to search for more information in order to support a decision. It is difficult to understand how using technology instead of paper could eradicate that situation. Perhaps Alesandrini's recommendation highlights the contradictions that exist in thinking about information technology and information overload. In fact, one recent study suggested that information technologies do not cause information overload but are tools to combat the problem (Reuters, 1998). This apparent inconsistency may be understood by examining
people's growing familiarity with information technology, its limitations, and its advantages. Still, there is some uncertainty in how much information technology may be contributing to overload in managers.

E-mail is an information technology that might contribute to overload, in spite of clear advantages, such as its speed and the ability to filter messages. While emphasizing these advantages, Alesandrini (1992) admitted that e-mail could also "open a new channel of communication that quickly becomes saturated" (p. 63). The specific role of e-mail in causing information overload required additional study.

Information Overload and E-Mail

Electronic mail is the largest single use of the Internet (Bentley, 1998), and if used unwisely, it could easily overwhelm the manager with a flood of information. That threat is growing to a point where e-mail has been cited as the primary cause of information overload (Bird, 1997; Gundry, 1998). Some 94% of employees in this country spend at least one hour each day handling unnecessary e-mail, according to Bird, a worsening problem as unsolicited e-mails are flooding organizational in-boxes.

The glut of unsolicited e-mail—spam—is particularly annoying to many organizational members who are sending and receiving an average of 190 messages per day (Institute for the Future, 1998). Since e-mail is reported to be one of the most used communication methods, and the most popular method for managers and professionals (Institute for the Future, 1997), those unsolicited messages may be more than simply an annoyance. They could harm productivity and effectiveness of organizations.
Two major studies of information overload within organizations and the stress suffered by managers as a result of that overload offered insight into the phenomenon (Reuters, 1996, 1998). However, the overload in these studies was caused by all information, to include written reports, newspapers, magazines, written memoranda, as well as electronic sources, including the telephone, fax, and e-mail. A more restricted study was warranted to determine the unique role of e-mail on information overload. Moreover, those earlier studies depended exclusively on self-reported surveys, so they lack some of the richness available in a qualitative case study.

Examining information overload and e-mail, Rose and Strom (1998) argued that “e-mail has become a heavy weight on our shoulders, as we deal with the frustration of incorporating it into our working lives” (p. 6). The frustration they studied came from the overabundance of e-mail that is frequently received in organizations. Four sources of that overabundance include mailing list traffic, large attachments, unsolicited commercial e-mail, and error reports. Surprisingly, their research suggested that mailing lists, sometimes described as listservs, constitute the single largest source of electronic mailbox clutter. The problems with large attachments are several. First, at the technological level, slower speed modem connections cause longer delays in downloading mail. Second, at the psychological level, large attachments may cause stress if the individual lacks the time to read and process the information received. Unsolicited e-mail has become, according to Rose and Strom, “a fact of life for Internet users” (p. 22), although some possibility exists to filter out such annoyances. Finally,
error reports have become another fact of life on the Internet, reports that announce when something is wrong with a message that had been previously sent.

The overabundance of e-mail has been called “the dark side to the [e-mail] technology” (Verespej, 1995a, p. 48), because of the contribution it may make to information overload. One manager claimed to receive 250 e-mail messages daily, stating that she required fewer than 10% of those messages (Verespej, 1995b). The time spent reading—or even just deleting—those messages could have been spent more profitably in other pursuits. If decisions are difficult to make when not enough information is available, they may be equally difficult when too much is provided (Mann, 1998).

Illustrating the potential for overload from e-mail, Posch (1996) estimated that the number of workers using e-mail exceeds 60 million, a number he predicted would double by the end of that decade. Those workers were sending an estimated 2 billion messages a month in 1996, a number that Molpus (1999) suggested may reach 3 billion per month before the end of 1999. Whittaker and Sidner (1997) found that the major problems faced by recipients of these numerous messages include an inability to read and reply to them in a timely manner and an inability to manage communication, often leading to lost information. Those facts have potentially serious implications for the individual manager and the organization.
Filters

Overload from e-mail is experienced in part by the overabundance of messages received. The chief advantage of e-mail, though, according to Alesandrini (1992), is the computer’s ability to sort through messages and select only those that are most important to the manager. Sorting of messages is known as filtering (Rose & Strom, 1998), allowing receivers to eliminate some messages before they are ever processed. It may also permit the receiver to have e-mail messages automatically placed into temporary subsets or folders that can be viewed when needed (Adamski & Adamski, 1996). These utility programs do provide the flexibility for the user to sort the e-mail into that priority system, using certain key words in the subject line or the text to sort them (Angell & Heslop, 1994).

Filters may help manage the flow of e-mail. One agent for filtering messages is known as An Intelligent Mail System (AIMS), because of its ability to assist users in filtering or prioritizing their messages through a knowledge-based approach (Motiwalla, 1995). The message receiver establishes keywords to restrict or prioritize messages into various prearranged categories. As everyone in the organization recognizes those categories, AIMS can automatically sort the messages for the manager. A major limitation to such a system, though, is that everyone must recognize and use the same nomenclature. Moreover, customers or clients might be unaware of the filtering system, and the individual could miss potentially important incoming information. Still, with the
growing problem of information overload brought about by excessive e-mail, some filtering device may become necessary.

Inside organizations, the speed and ease of e-mail can quickly contribute to overload. While pointing out many of the advantages of e-mail over other communications media, Sproull and Kiesler (1991/1995) warned that more information is not necessarily better information. Setting up an e-mail system is not difficult in most modern organizations, and first-level efficiency effects deal with the technological changes demanded. Second-level effects, though, include social changes that may often be unexpected.

Many organizations today are installing electronic networks for first-level efficiency reasons. Executives now beginning to deploy electronic mail and other network applications can realize efficiency gains such as reduced elapsed time for transactions. If we look beyond efficiency at behavioral and organizational changes, we’ll see where the second-level leverage is likely to be. These technologies can change how people spend their time and what and who they know and care about. (p. 15)

Since one of the more dysfunctional second-level effects might be information overload in organizational members, steps may need to be taken to lessen that risk. Sproull and Kiesler suggested that organizational policies could help establish individual and group responsibility with e-mail, but they warned that such policies might discourage individual responsibility if the rules were to become too restrictive.
Bird (1997), Hartman and Nantz (1995), and Stuller (1996) also suggested that policies could help organizations to control the unrestricted transmission of internal e-mail, but Bird placed greater emphasis on training in electronic etiquette and adoption of technological filters that allow individuals to self-screen incoming messages. Training is an understandable recommendation, and while costly, it may be the single best way to help managers and others who are drowning in information sent from inside the organization. Filters, on the other hand, while helping to keep out much of the unwanted e-mail, could also keep out necessary but unexpected information that could help the manager as he or she scans the environment. There may be nuances in messages that computers at present are unable to decipher, and human sensitivity may be required to appreciate and then act on those unfiltered messages.

Contradictory Findings

Finally, research among information systems managers concluded that e-mail “is a godsend that has improved their productivity” (Cole-Gomolski, 1997, p. 1). Of 250 managers surveyed, two thirds felt that e-mail did not create information overload, and 86% felt that it made them more productive. Many of those managers also claimed that e-mail was a more concise and effective means for them to communicate than through other methods. The surprisingly positive results from this study can be understood by examining the sample. Information systems managers are accustomed to working with new technologies, so they may not mirror the general organizational manager. Additionally, their responsibilities are more prescribed than those of general managers.
Finally, information systems managers may likely experience less stress when
approaching technology, and that attitude could influence their experience of overload
brought on by e-mail.

Angus (1997) believed that e-mail is one aspect of information overload, although
he held that it is ultimately not technology but people who must manage the deluge of
information coming in through e-mail. Because of all these conflicting studies, there is a
need for additional research into e-mail and the role it may play in information overload,
especially among organizational managers.

Ongoing Need for Research

Since men and women are believed to communicate differently (Tannen, 1990,
1994), gender might also influence their communication through e-mail. One cross-
sectional study of 392 men and women in three countries measured the perceived
usefulness and ease of use of e-mail, concluding that differences exist between men and
women in their attitudes toward e-mail (Gefen & Straub, 1997). For women, e-mail is
socially significant, its greatest value being in establishing and maintaining relationships.
Men, on the other hand, use e-mail to assert independence and seek respect.

Unexpectedly, in spite of these findings, Gefen and Straub concluded that gender
differences do not affect the actual use of e-mail, even though they influence attitudes
toward the technology. That conclusion contradicts Brosnan and Davidson (1994), who
acknowledged inconsistencies in the research literature but who found strong evidence
supporting gender differences in both attitudes towards and use of various computer
applications. These inconsistencies highlight the need for additional study, especially regarding e-mail use among men and women who are managers.

Other research into e-mail has largely focused on the choice of communications medium and the effects of that choice (Rudy, 1996). Efficiency is often the most important reason for choosing one information technology over others, although some managers may select a particular technology based on personal preferences. Within some teams, face-to-face communication is often used at the start and end of a work period, helping to establish a shared context. Then e-mail may be used throughout the actual work period. That seems to describe the work pattern created by Woods et al. (1998) in their collaborative team writing.

Finally, Rudy (1996) found that information overload is a distinct possibility with e-mail, primarily because of the opportunity to send a message effortlessly from one individual to many. Past research on overload has often focused on what information overload is and how it might be alleviated, although he added that because of the growing risk of information overload inside organizations, additional research is needed to gain a richer understanding of that phenomenon.

Such studies might also throw light on a general organizational issue, namely, the process by which groups and organizations develop the rules and norms which govern the behaviour of a mature technology (which email will presumably eventually become). When faced with a new technology, are individuals capable of working out for themselves what the best response is, or do they need significant guidance from colleagues and the organization as a whole? In this
sense email, and in particular, the information overload issue within it, might be seen as a probe which we can use to discover something about individuals and organizations. (p. 210)

This study adds to the body of knowledge by exploring those issues Rudy suggested. There is a continuing need for research into e-mail, specifically its role on information overload in organizational managers.

Consequently, the present study explores an important social issue that is both timely and meaningful. It should add significantly to the body of knowledge about information overload, especially that caused by e-mail. Moreover, because this research is focused on e-mail and its role in information overload in managers, it explores an area that had not been studied adequately before. an area that is lacking in rich understanding.
CHAPTER 3: RESEARCH METHOD

Overview

The research method for this study was essentially qualitative, since it sought to explore the unique role of e-mail on information overload within one discrete group of individuals—managers—in modern organizations. Based on the research questions posed and the strategy employed to seek an understanding of information overload in managers, this was a descriptive case study. Yin (1993, 1994) highlighted the case study design as most valuable and illuminating when the investigator has little control over the events in the study and when the focus is on some contemporary phenomenon within a real-life context. Such contexts as organizational and managerial processes are uniquely well suited to case study design. In this study the organizational context was essential to understanding e-mail usage and the experience of managers with information overload. Stake (1994) also pointed out that the utility of case study design is in the unique experience of research informants. "The methods of qualitative case study are largely the methods of disciplining personal and particularized experience" (p. 245). This research did not take place in a laboratory that would divorce the manager from his or her organizational setting. Rather, the research questions drove the researcher to seek the manager’s experience within the context of real life.
A significant advantage of the case study design for this research is that the data could be collected by using a variety of procedures (Creswell, 1994). Quantitative data from surveys were useful in supporting and verifying generalizations made from limited numbers of interviews (Merriam, 1988). On the other hand, qualitative data from interviews enriched the understanding of managers' experience of information overload and methods for handling the burgeoning use of e-mail within the organizational context. Finally, objective, verifying data were sought from information technology managers on the numbers of e-mail messages sent and received by organizational managers. The use of multiple methods of data collection is known as triangulation (Creswell; Janesick, 1994; Merriam; Yin, 1993, 1994). As these multiple sources of evidence converged, they reinforced the research findings and added robustness to the conclusions. According to Mertens (1998), triangulation is a research strategy that enhances credibility, or internal validity. "Triangulation involves checking information that has been collected from different sources or methods for consistency of evidence across sources of data" (p. 183). Creswell defined one particular approach to triangulation as "between methods, drawing on qualitative and quantitative data collection procedures" (p. 174). Consequently, the researcher gathered data from each organization using three distinct collection methods: surveys, in-depth interviews, and a records review.

The researcher conducted a mail survey among managers at two professional business organizations in Central Virginia. This survey sought to determine managers'
use of e-mail or resistance to information technology. It also attempted to find any differences that might exist between male and female managers in their use of e-mail, resistance to information technology, or the presence and severity of information overload. Moreover, it sought to determine managers' experience of information overload in the presence of possibly excessive numbers of e-mail messages. To enrich those findings, this study also included in-depth interviews among selected managers. These interviews explored in greater depth the informants' experiences with e-mail and information overload and their efforts to control overload. In addition, specific questions were posed to discover methods those individuals employ or would recommend to handle information overload as the result of numerous incoming e-mail messages. Finally, to verify responses from managers on numbers of e-mail messages regularly received and sent, a records review of those data was requested from the organizational information technology managers.

**Surveys**

The study determined through survey methods some of the characteristics of organizational managers and their use of e-mail in the organizational setting. Rea and Parker (1997) suggested several advantages of the survey process. One major advantage includes the cost and time savings associated with survey research. Surveys may often be completed in much less time than might some other types of data collection, especially interviews. Additionally, survey research is often less expensive than some other types of research, since it may involve use of the telephone or mail, without an in-person
presence. For this study, the researcher mailed questionnaires to organizational managers in Company A, enclosing a stamped, self-addressed envelope to return completed questionnaires to the researcher. Questionnaires were distributed to managers of Company B with the request that they be returned to the senior executive’s secretary, who served as a collection agent. Another advantage is that surveys generate standardized data that are easily quantified and lend themselves to statistical analysis. Along with these weighty advantages, however, is the reality that surveys rely on respondents’ honesty as they self-report their knowledge, attitudes, or behaviors (Mertens, 1998), a criticism that is not unique to surveys. In addition, surveys lack the rich description that may come from other data collection methods, including interviews.

Kerlinger (1973) rehearsed several potential limitations of surveys, to include a possible lack of response and an inability to check the responses given. Since responses to mail surveys are traditionally poor, he recommended resorting to reminders or even monetary inducements. A suggestion he failed to consider is the involvement of senior management inside the organization who might introduce the researcher and encourage questionnaire completion. If senior management is seen to endorse the study, there might be increased participation. In the survey instrument used in this study, the researcher involved the senior executive in an endorsement letter or e-mail message that accompanied the survey. That letter and e-mail message, in addition to personalized follow-up mailings, are believed to have increased the rate of returned questionnaires. Resources precluded sending monetary incentives to survey participants. In response to Kerlinger’s criticism about the inability to check on responses given, other data collection
methods offer that ability. Such convergence of multiple sources of evidence permitted triangulation, a unique advantage of the case study method (Yin, 1994), reinforcing the survey findings, interview data, and organizational records and enriching the entire research effort.

Mertens (1998) warned, "After an exhaustive search of the literature, you may determine that no existing instrument will measure exactly the construct in which you are interested. Thus, you will find it necessary to develop your own data collection instrument" (p. 313). This was the situation in this study, for no instrument had been found that measures attitudes about managers' use of e-mail and their experience with information overload. Other surveys measured attitudes towards and use of information technology in general or experience of information overload from all sources, but no instrument measured exactly the relationship between e-mail and information overload needed for this study. Consequently, it was necessary to follow Mertens' suggestions about developing a unique survey instrument. She recommended (a) defining the objective of the instrument, (b) identifying the intended respondents, (c) reviewing existing measures, (d) developing an item pool, (e) preparing and pilot testing the prototype, and (f) conducting an item analysis and revising the instrument as necessary.

A number of works offer suggestions for improving questionnaire design (Babbie, 1990; Fowler, 1984; Rea & Parker, 1997). Sheatsley (1983) argued that such design is not a science but an art, suggesting that survey questions be short, ideally fewer than 25 words each, and that the entire survey be brief. Most questionnaires, he contended, are too long. Rea and Parker added that respondents to a mail survey should be capable of
completing that survey in 15 minutes or less. The closed question Likert scale was especially appropriate to this study, since it probes managers’ attitudes about e-mail and their experience of information overload. According to Rea and Parker (1997), “The Likert scale works particularly well in the context of a series of questions that seek to elicit attitudinal information about one specific subject matter” (p. 60). Moreover, that scale is easily quantified for later analysis, one of the advantages of survey research. For those reasons, the survey instrument designed for this study employed a 5-point Likert scale on a number of questions posed.

The questionnaire contains 15 closed questions that respond to the research questions. Those questions relate to the presence and value of e-mail in the office setting, the individual’s acceptance of or resistance to information technology in general and e-mail in particular, and the experience of information overload. Several of the survey questions were reverse scored to preclude response sets. Kerlinger (1973) defined a response set as “a general tendency to agree or disagree with questionnaire items, regardless of their content” (p. 43). In other words, some personalities might tend to strongly agree or agree with virtually all questions, regardless of actual attitudes or opinions. Consequently, three items in the questionnaire were reverse scored, or stated in the negative. Bradburn (1983) suggested “trying to develop positive and negative statements with which to measure attitudinal dimensions. By using balanced items, survey researchers tried to minimize the impact of such response sets” (p. 316). Additional closed questions dealt with the average number of e-mail messages sent and received daily and demographic information, to include gender.
Along with the advantages of the mail questionnaire, though, Kerlinger (1973) added, "It has serious drawbacks unless it is used in conjunction with other techniques" (p. 414). Among those other techniques in this study was the in-depth interview.

**Interviews**

While interviews, like surveys, rely on honest self-reporting, they do permit the interviewer to restate questions and probe more deeply than might the survey. Stewart and Cash (1974/1988) defined interviewing as the "process of dyadic, relational communication with a predetermined and serious purpose designed to interchange behavior and involving the asking and answering of questions" (p. 3). Specifically, they pointed to the probing interview as one designed to obtain needed information as accurately and completely as possible in the shortest amount of time. Merton, Fiske, and Kendall (1990) called such interchanges focused interviews. In the focused interview, four characteristics emerge. First, the persons interviewed are known to have been involved in a particular situation. Second, the researcher has provisionally analyzed the elements and total structure of that situation. Third, based on that preliminary analysis, the researcher develops a guide to direct the interview. Finally, the interview is conducted to ascertain the informant’s definitions or assessment of the situation.

In his review of various qualitative data collection methods, Creswell (1994) saw interviews as particularly helpful when informants cannot be observed directly and yet can provide valuable information. However, such interviews do constitute filtered information, since the researcher may not be observing the individual’s actual practice in
the context of the workplace. To reduce this limitation, it is helpful for the researcher to interview the informant in the work setting, if not during the actual conduct of the professional work. Creswell also acknowledged that some people may be less perceptive or articulate than others, diminishing the value of the interview. Finally, there is a risk that the researcher’s presence may bias the interview results somewhat.

Those acknowledgements are present in Yin’s (1993) work on case study design, and yet he emphasized the importance of interviews as essential to reporting and interpreting the details of the phenomenon under study. Specific interviewees and well-informed respondents—Yin prefers the term informants—illuminate and provide valuable insights into the situation. Because of the possibility of bias, poor recall, and inarticulate presentation, though, he suggested triangulating, or corroborating, interview data with information from other sources, such as surveys, echoing Kerlinger (1973). Moreover, the duration of an ideal in-depth interview should be no more than 30 minutes, although they may extend to as much as 45 minutes or an hour (Fowler, 1984; Rea & Parker, 1997).

Records Review

A third means for collecting data in this study was a records review of e-mail use by managers. Mertens (1998) explained that all organizations “leave trails composed of documents and records that trace their history and current status” (p. 324). Among the records that many organizations keep are computer files and tapes that may document the use of e-mail by the organization’s managers, particularly the numbers of messages sent
and received. Mertens continued, “The researcher cannot be in all places at all times; therefore, documents and records give the researcher access to information that would otherwise be unavailable” (p. 324).

The sensitivity or privacy of some records makes access to that information a challenge (Mertens, 1998), although the information that this study sought was not the substance but simply the numbers of e-mail messages sent and received. Nevertheless, that information needed to be negotiated with information technology managers and senior executives at each of the two organizations studied. The value of those records is in providing an objective measure of the average e-mail messages that are actually sent and received by the studied population. Guba and Lincoln (1994) and Denzin and Lincoln (1994) wrote that confirmability parallels objectivity, arguing that records data and their interpretation are not influenced by a researcher’s bias. In addition, this third data source helps ensure that the survey and interview data are not flawed by informants’ inaccurate responses. The result of the researcher’s negotiating with senior officials was that one company provided access to its e-mail server, while the other did not.

**Ethical Considerations**

As Creswell (1994) and Mertens (1998) pointed out, the researcher has an ethical obligation to respect rights, needs, values, and desires of informants. Specifically, the researcher had to be clear with all research participants about the purpose of the study and how the data would be used. In addition, interview participants were asked permission to interview and to record the proceedings, and individual anonymity was
assured. Moreover, a research exemption form was filed with the institutional Committee on the Use of Human Subjects in Research. These protections met the concerns that Merriam (1988) cited as common to all social science research: protection of subjects from harm, the right to privacy, the notion of informed consent, and the issue of deception. This research study was conducted with a high regard for ethical considerations.

Pilot Test and Data Collection Techniques

A pilot test of the questionnaire and interview frame was conducted among selected managers at a third organizational facility in the same geographic region as the two primary organizations. The pilot test of the questionnaire sought to include approximately 30 or 40 managers as a reasonable number (Long, Convey, & Chwalek, 1985; Rea & Parker, 1997). Of 40 questionnaires sent to organizational managers, 30 were returned. This test enhanced the validity—or credibility—and the reliability—or dependability—of the instrumentation (Guba & Lincoln, 1994; Mertens, 1998). That survey instrument is at Appendix B. The researcher conducted the pilot test among managers at an organization that is similar to the two primary organizations in size, peripherality, and use of e-mail. That is, the selected pilot test site has organizational members that number in the thousands, who are diverse and globally dispersed, and who employ e-mail regularly as an important communications tool.

A meeting with senior executives at both the pilot test site and each of the two primary sites explained the purpose and design of the research study, soliciting
permission to conduct surveys and interviews with selected managers. In addition, at the primary sites, the researcher requested permission to conduct a records review of e-mail usage among managers. That review was to determine raw numbers of e-mail messages sent and received by organizational managers. A confidential listing of managers was obtained from each organization, and from those listings, the questionnaire mailings were prepared.

The initial interview list was generated based on executive input. Merriam (1988) advised that the interviewer begin with interviewing a key person who is knowledgeable about the phenomenon being studied and then asking for referrals to other potential informants. Such a purposive, or purposeful, sample is based on the assumption that certain informants have information that may be more helpful to the researcher in discovering or understanding the phenomenon being studied. Creswell (1994) added that purposive samples allow the researcher to select those individuals who can best answer the research questions. No attempt, he emphasized, should be made to randomly select informants. The specific type of purposeful sampling strategy followed in this study was what Patton (as cited in Mertens, 1998) termed snowball or chain sampling. The researcher began interviewing one key informant who in turn recommended other informants who are knowledgeable about the use of e-mail and information overload. Starting with a short list of informants, the researcher found the list growing, or snowballing, as names were added through the referral of informants.

Data for this study were collected from June through August 1999, including surveys and interviews at the pilot site, and surveys, interviews, and records review at the
two primary locations. Surveys were mailed, using a confidential numbering system that allowed the researcher to determine which individuals returned questionnaires. That system permitted a targeted follow-up to nonrespondents. Stamped, self-addressed envelopes were included with each survey sent to Company A managers to encourage its return to the researcher. In addition, to increase participation among respondents, a cover letter signed by the senior executive at Company A explained the survey’s purpose and endorsed the research. At Company B, an e-mail message from the senior executive’s secretary served that same purpose. She also served as the collection point for all returned surveys. Interviewees were selected purposefully from among all managers and were interviewed in the organizational context, although in a private setting.

**Variables and Data Analysis**

Creswell (1994) emphasized variables as a term most appropriate to the quantitative paradigm, and yet that term is appropriate in this mixed-methodological study, that included survey data as well as interview and records review data. Based on the grand tour research question and the four subquestions, three subscales were generated for analyzing that survey data. Those subscales correspond to independent and dependent variables and measured the presence and value of e-mail for the respondents, resistance to information technology, and the individual’s experience of information overload. In addition, the research determined the influence of gender on the presence of severity of information overload. Based on the research questions, three independent variables and one dependent variable were identified.
### Table 1

**Variables and Research Questions**

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Research Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent variable #1 - Presence/value of e-mail</td>
<td>Subquestion #1 – What is the response of managers to information overload caused by excessive e-mail?</td>
</tr>
<tr>
<td>Dependent variable #1 - Information overload</td>
<td>Subquestion #1 – What is the response of managers to information overload caused by excessive e-mail?</td>
</tr>
<tr>
<td>Independent variable #2 - Gender</td>
<td>Subquestion #2 – How might gender influence the presence or severity of information overload?</td>
</tr>
<tr>
<td>Independent variable #3 - Resistance to information technology</td>
<td>Subquestion #3 – How might a manager's resistance to information technology influence his or her experience of information overload?</td>
</tr>
</tbody>
</table>

To analyze the survey data, the researcher used a bivariate correlational analysis, to determine relationships between the presence of e-mail and the experience of information overload and an individual's resistance to e-mail and overload. While correlation does not necessarily imply causation (Nation, 1997), the analysis guided the researcher's work in the in-depth interviews. Specifically, relationships emerged through...
use of the Pearson product-moment correlation coefficient, described by Long et al. (1985) as “Pearson’s $r$ or the correlation coefficient” (p. 181). That statistical tool helps to determine the existence of a relationship between two variables and estimates the magnitude of that relationship. In the Pearson correlation coefficient, the designation $r$ symbolizes the coefficient’s estimate of linear association based on the data (Cooper & Schindler, 1998). Several researchers pointed out the value of correlational analysis as the preferred method for describing the strength and direction of a relationship between two or more variables (Kerlinger, 1973; Long et al., 1985; Mertens, 1998; Rudestam & Newton, 1992). That analysis responded to subquestions 1 and 3 in this study.

To determine the effect of gender on the presence or severity of information overload, posed as subquestion 2, a $t$-test was conducted. Gender was used as a non-manipulated independent variable. This test is appropriate for analyzing the difference between two groups, cited as between-groups variability (Nation, 1997). Subquestion 4, lessons learned regarding information overload from organizational managers, emerged primarily from the records review and interview data.

The statistical technique selected was the Pearson correlation to discover the statistical significance among the 15 questions. Factor analysis among all questions generated meaningful measures of the three subscales. A factor analysis requires considerably more variables and a much larger sample size than afforded by this investigation. However, using this technique provided support for the clustering of questionnaire items into subscales. In other words, only when question items were found to cluster in a statistically significant manner were they averaged for further analysis. As
the statistical significance of those clusters was confirmed, three adjusted subscales were formed. Those subscales included Presence/Value, indicating the use and importance of e-mail to the respondent; Resistance, suggesting the degree to which the respondent resists using information technology; and Overload, measuring the respondent’s experience of information overload.

A t-test showed the different responses of men and women on the three subscales. That test involved measuring what significant differences, if any, existed between men and women and the three subscale items. That test revealed whether gender has a statistical influence on the presence and severity of information overload.

Finally, a Pearson correlation was conducted to determine what relationships, if any, exist between the presence and value of e-mail to the respondent and his or her experience of information overload. A second Pearson correlation determined the relationship between a respondent’s resistance to information technology and his or her feeling of information overload. Those correlations measured the statistical significance of those relationships.

Addressing various forms of statistical analysis, Kerlinger (1973) suggested that factor analysis “is perhaps the most useful and flexible” (p. 150). Factor analysis, while important to this study for allowing creation of the three adjusted subscales, was inappropriate for the larger study because of the limited numbers of variables and subjects. Consequently, the two primary methods for analyzing the emerging data from the survey were correlational analysis, using the Pearson product-moment correlation coefficient, and the t-test.
Data from those surveys guided the interviews with organizational managers. The interview data proved particularly challenging because of the amount of information that was available. Consequently, the researcher sought to place interview information in categories for analysis. Data collection and analysis often occur simultaneously in the qualitative case study (Creswell, 1994; Merriam, 1988; Yin, 1993). Therefore, the researcher began the analysis of the data as they were being collected, classifying the data as patterns emerged or experiences were repeated. The researcher's task was to recognize those patterns from certain recurring regularities in the data. The review of the literature had sensitized the researcher to some of the major issues that emerged during the data collection process and helped in recognizing the developing patterns. Identifying unique or unusual quotes was especially useful during the collection and analysis stage of the research for later incorporation into the case report.

Creswell (1994) pointed out that the process of qualitative analysis is based on data reduction and interpretation. Voluminous amounts of information from interviews must be reduced to certain patterns, categories, or themes and then interpreted. The researcher remained alert to emerging experiences that managers had with information overload and e-mail. For example, the literature suggested that organizational policies and procedures could generate certain categories (Hartman & Nantz, 1996). Interpreting the managers' experiences "will form the basis for the emerging story to be told by the qualitative researcher" (Creswell, p. 154). Throughout the data analysis, then, data were categorized, reviewed, and used to make preliminary judgments about the role of e-mail on information overload in organizational managers.
This research study was a multiple-case design in that two cases were included in the study (Yin, 1993). According to case study literature, the evidence from such a design may be more compelling than a single-case design, and the replication logic could reinforce the findings (Mertens, 1998; Yin, 1994). Based on this multiple-case design, the researcher analyzed each organization's data separately, and then the quantitative data were combined to see if similar results or replications would be found (Yin, 1993, 1994).

**Identification of the Population**

Two international, publicly owned companies were selected for this research study. Both are major organizations in revenues and in personnel employed. The first is a leading producer of telecommunications systems. The second is involved in management and technical expertise, largely relating to the nuclear industry. Both are international organizations, with a diverse workforce numbering in the thousands. Included in that workforce are men and women of multiple racial and ethnic backgrounds, making the diversity of these organizations representative of many others throughout the country. Moreover, preliminary contact with organizational members indicated that both use e-mail extensively for both internal and external communication. Not only is e-mail a quick, inexpensive, and efficient tool for communicating with superiors, colleagues, and subordinates in the organizations, but also it is essential for virtually instantaneous communication with customers around the world.

The first organization is, in the words of its literature, "the leading provider in the telecommunications world, with communications solutions that combine telecom and
datacom technologies with freedom of mobility for the user" (S. Lithander, personal communication, April 21, 1999). With more than 100,000 employees in 140 countries, this company claims that it simplifies communications for its customers, including network operators, service providers, enterprises, and consumers. At its site in Central Virginia, the Private Radio Systems division of this global organization designs and markets two-way mobile communications products for public safety, utility, business and industrial, and government markets worldwide. That division employs 59 managers in eight states.

The second organization has its headquarters in Lynchburg, Virginia. Applying technical leadership to environmental programs involving the nuclear industry, this organization's resources are dispersed geographically around the United States and overseas. Cited as one of the top nuclear engineering firms in the nation, it has more than 1,300 professional and support individuals located in 15 sites throughout the country and abroad. It is involved with providing management and operations services to governmental and commercial customers, especially in the areas of nuclear decontamination and decommissioning, waste management, and environmental restoration. At its Lynchburg headquarters, this organization has 21 managers.

Identification of the Sample

Since the total population of both organizations includes only 80 managers, the survey was sent to all managers rather than just a random sample of that population. According to Babbie (1990), survey literature has suggested a wide range of acceptable
response rates. Babbie argued that a response rate of 50% is generally considered adequate for analysis and reporting, whereas a response rate of 60% is considered good, and a rate of 70% or higher is very good. Mertens (1998) also believed that if respondents and nonrespondents are fairly similar, a response rate of 50% is acceptable for survey research. Among all those receiving the survey for this study, a response rate of 70% was hoped for, since the organizational senior executive endorsed the project in a cover letter or e-mail message. Moreover, surveys were numbered to allow the researcher to send personalized follow-up notices to those managers who did not return their surveys within the requested time period.

Additionally, the researcher interviewed six knowledgeable managers at each location about their experiences with information overload and e-mail. Mertens (1998) and Morse (1994) suggested that number, claiming that six participants may be sufficient for phenomenological research. While this study is not strictly phenomenological, it did seek to discover a unique human experience through the detailed descriptions of the individuals studied (Creswell, 1994; Mertens; Patton, 1982). Interviewing six managers at each site provided the subjective experience with e-mail and information overload that was sought, especially when that information was triangulated with the survey and records review data collected. The interviewer initially contacted one key manager who was knowledgeable about e-mail and information overload in order to determine a rich, purposive sample of informants. To lessen the effects of removing the informants from their organizational setting, the manager’s private office or a private interview room within the work area was used in every instance.
While conducting the focused interview with the selected sample, the researcher followed a semistructured format, as recommended by Merriam (1988). Since certain information was sought from all interviewees, a predetermined set of issues guided the interviews, although the precise wording and order of questions was not necessarily determined before the interview. Such a format permitted the researcher to respond to the situation and the emerging data from the informant.

The interview questions probed the informants' experience with e-mail in the organizational setting, the amount of e-mail he or she must negotiate on average, any resistance to or reluctance to use e-mail or information technology, and suggestions about how or whether to improve the current situation with e-mail. The researcher asked each interviewee for permission to record the interview (Creswell, 1994; Merriam, 1988; Stewart & Cash, 1974/1988), permitting an accurate rendering of the informants' perceptions.

Verification

According to Yin (1994), case study research that involves multiple cases employs a replication logic that enhances the evidence of the study and makes it more robust. Moreover, Yin argued that such a multiple-case design gains external validity. External validity means the degree to which the study's results may be generalized to other situations. Within the qualitative paradigm, external validity has been sometimes spoken of as transferability (Denzin & Lincoln, 1994; Guba & Lincoln, 1994; Mertens, 1998). Since managers from two organizations were surveyed and interviewed, the
researcher assumed the responsibility to provide sufficient detail to ascertain the extent to which the experiences of those managers may be generalized. In other words, the findings from the multiple cases should reinforce the external validity, or transferability, of this study.

Internal validity in qualitative research refers to the correspondence between how the informants perceive social constructs and how the researcher presents those perceptions (Mertens, 1998). More simply defined, internal validity “deals with the question of how one’s findings match reality. Do the findings capture what is really there?” (Merriam, 1988, p. 166). Within the qualitative paradigm, Guba and Lincoln (1994) identified internal validity as credibility, and suggested judging credibility through triangulation and member checks. Triangulation occurred as the researcher collected data from multiple sources, to include surveys, interviews, and records review. Those data were checked for consistency of evidence across the various sources. Additionally, the researcher conducted member checks at the end of each interview to summarize informants’ comments, thus ensuring that the researcher’s notes and the informant’s comments accurately reflected the perceptions and experiences of the interviewee. Mertens considered member checks the most valuable criteria in establishing credibility.

Denzin and Lincoln (1994) and Guba and Lincoln (1994) defined objectivity as confirmability. Mertens (1998) added, “Confirmability means that the data and their interpretation are not figments of the researcher’s imagination” (p. 184). The records data, cited in Yin (1994) as archival records, offer an objective, precise, and quantitative statement of the numbers of e-mail messages that are sent and received by organizational
managers. While those data are objective and relevant to this study, they were difficult to obtain. Yin acknowledged that in spite of their value in some case study research, access to archival records is frequently a challenge to the researcher, largely because of privacy concerns. That was the case in this study.

Reliability refers to the demonstration that the research could be repeated with the same results (Yin, 1994). This verification in qualitative studies is often addressed as dependability (Guba & Lincoln, 1994; Mertens, 1998). Merriam (1988) admitted that reliability in the social sciences is problematic because of the dynamic complexity of human behavior. In fact, she pointed to the fact that internal validity may amount to a demonstration of reliability. There is a difference between these two, however. To ensure internal validity, or credibility, the researcher in this study sought to verify that he was recording reality as perceived by the informant. To ensure reliability, or dependability, the researcher documented the conduct of the research with a case study protocol (Yin, 1994).

Conclusion

Rudy (1996) found that much research has already been conducted on e-mail, one of the more recent information technologies in organizations. At the same time he acknowledged that much of that research lacks the organizational context. In other words, many of the studies have been experimental, conducted in controlled settings. Without the rich description of managers in their organizational context, it is more challenging if not impossible to examine and describe adequately the phenomenon under
study. Rudy called for a study of e-mail and its role on information overload in an organizational setting. This case study answers that call.
CHAPTER 4: RESULTS

Introduction

Prior to conducting the proposed research study, a pilot study was conducted between June 1 and June 28, 1999 with 40 managers of an international nuclear engineering company in the same geographic region as the two primary research sites. That pilot study followed Cooper and Schindler's (1998) recommendation that the size of the test group be between 25 and 100 respondents drawn from the target population. For this pilot study, the researcher conducted brief interviews with the selected managers and distributed surveys with a cover letter signed by a senior company executive. The response to those surveys exceeded 77%, and the responses indicated that the respondents understood the questions and gave appropriate responses. Moreover, interviews with managers revealed that they believed the survey instrument designed by the researcher had content validity and that questions were commonly interpreted in the same manner (Fowler, 1984; Mertens, 1998). In addition, the pilot test permitted the researcher to interview subjects in private office settings, thereby "scanning the environment for factors that might confound the results" (Cooper & Schindler, p. 386). From those interviews, the researcher thus refined the interview questions before conducting the full study. Finally, based on the pilot study, the researcher made the assumption that differences in responses did result from differences among respondents rather than from differences in their understanding of the questions.
Prior to starting data collection for the full study, the researcher met with senior managers of both organizations to explain the study's purpose, how the companies could benefit, and what they would be asked to provide the researcher. A copy of the letter to organizational executives and the research proposal is at Appendix A. From that initial contact, the researcher gained full endorsement of senior management for the data collection stage.

Surveys were distributed to 60 managers of Company A and 21 managers in Company B in late June 1999. One manager in Company A left the company immediately after the survey mailing, reducing that population to 59 managers, while two managers from Company B were sent to Russia for up to 6 months just prior to the distribution of the surveys, reducing that population to 19. The surveys to Company A managers were accompanied by a letter signed by the senior company executive (Appendix B), while surveys to Company B managers had a cover letter signed by the researcher, since the senior executive of that company was out of the country during that period. However, the senior executive’s secretary at Company B did send an e-mail message to all managers expressing the senior executive’s endorsement of the study and offering to collect all completed surveys for the researcher. Response from both organizations to that initial mailing was excellent, in excess of 70%, believed to be largely the result of senior manager endorsement. Two weeks later, the researcher sent a personalized follow-up reminder to those managers who had not responded, and after two more weeks a last reminder was sent. The final questionnaire response rate from Company A was 94.9%, while the response rate from Company B managers was 94.7%.
Several factors may explain the high response, some of which are cited by Rea and Parker (1997). First, the topic is one that several respondents described as “really interesting and relevant” to their work. In addition, keeping the survey short, using personalized mailing envelopes, and including stamped self-addressed envelopes for Company A and easy return to the senior executive’s secretary for Company B encouraged participation in the study. Finally, personalized cover letters were used for follow-up reminders. Moreover, unknown to the researcher at the start of this study was that management at Company A had discussed earlier in the year how to handle the large numbers of e-mail messages they regularly received. Consequently, that company and the researcher had mutual interests in the subject of the investigation. Both companies were interested in the researcher’s promise to share findings and recommendations with the senior executives upon completion of the research.

Interviews with selected managers of both companies were conducted in July and August 1999. The issues that informed those interviews are listed in Appendix C. Adopting the snowball—or chain—sampling strategy identified by Rea and Parker (1997), the researcher began interviewing one manager at each organization known to be knowledgeable about e-mail and information overload. The identification of that individual came through initial interviews in which the researcher requested the names of managers knowledgeable about e-mail and information overload with whom he could talk. That strategy was followed throughout the interview process, leading to six interviews at each organization. Each manager agreed to have his or her interview recorded, a practice that allowed the researcher to take short notes during the interview.
and later transcribe the complete conversation. Those interviews lasted approximately 30 minutes, with the longest lasting 45 minutes. Each was conducted in the manager’s private office, investigating the manager’s use of e-mail within his or her real-life context (Yin, 1994), or a private office elsewhere in the company setting. Several managers made an effort to show the researcher their e-mail accounts and the inbox of messages received that day. Two opened their inboxes at the conclusion of the interview to show the numbers of messages received during those half-hour periods, confirming some of the data they reported during the interview.

Finally, the senior manager of one organization, Company B, permitted access to data on the numbers of e-mail messages received and sent by managers on a daily basis. To determine that number, several managers’ accounts were selected at random and the numbers of messages from several random days or weeks were selected. The Information Technology manager at Company A reported, “We would have to spend far too much money to get usable data.” Consequently, verifying data from Company A could not be obtained.

This chapter analyzes the results from each organization separately. Then, the quantitative data from both organizations are combined to see whether the combined results offer any additional insight. The Grand Tour question for this analysis is this: What is the role of e-mail on information overload in organizational managers? The four subquestions are as follows:

1. **What is the response of managers to information overload caused by excessive e-mail?**
2. How does gender influence the presence or severity of information overload?

3. How might a manager's resistance to information technology influence his or her experience of information overload?

4. What lessons regarding information overload can be learned from organizational managers?

**Statistical Correlation**

Prior to the statistical analysis of the data, the researcher had generated three subscales to measure the dependent and independent variables. These theoretical subscales were based on the researcher's assumptions about how managers might respond to the presence and importance, or value, of e-mail; their resistance to information technology; and their experience of information overload. Each theoretical subscale was formed from five questions on the questionnaire and were as follows:

Table 2

**Theoretical Subscales and Questionnaire Items**

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Questionnaire Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence/Value</td>
<td>1  2*  3  5  7</td>
</tr>
<tr>
<td>Resistance</td>
<td>4* 10  11  12  13</td>
</tr>
<tr>
<td>Overload</td>
<td>6  8  9* 14  15</td>
</tr>
</tbody>
</table>

* = reverse-score
A varimax (orthogonal) rotation factor analysis was conducted to confirm that these questionnaire items did cluster around the desired subscales. While factor analysis is often employed with much larger samples, it was an effective tool for verifying the researcher's theoretical groupings, while reducing "the multiplicity of tests and measures to greater simplicity" (Kerlinger, 1973). This initial data reduction step combined the responses from all surveys (n=73) to see which variables grouped, or clustered, together by highly correlating with one another (Mertens, 1998). Consequently, the varimax rotated component matrix presented in Table 3 resulted. That matrix indicates three significant groupings within the first three components that confirm a number of the researcher's theoretical groupings, although several items from the questionnaire were found not to cluster. Moreover, limiting these groupings or clusters to three components permitted the greater simplicity recommended by Kerlinger.

The rotated component matrix indicated that questions 8, 6, 15, and 14 clustered together, constituting the Overload subscale. Questions 4, 2, and 12 clustered similarly, becoming the Resistance subscale. Finally, questions 3, 5, and 1 correlated highly with one another, verifying and reducing the Presence/Value subscale. Several items that were more demographic were not included in those subscales, to include numbers of e-mail messages received (ERECVD), numbers of e-mail messages sent (ESENT), years of experience as a manager (YEARS), and managerial level (LEVEL).
Table 3

Factor Analysis of Questionnaire Items to Form Three Subscales

Rotated Component Matrix

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tbody>
<tr>
<td>Q8</td>
<td>.868</td>
<td>.133</td>
<td>2.07E-02</td>
<td>3.63E-02</td>
<td>-1.36</td>
<td>3.69E-02</td>
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<tr>
<td>Q6</td>
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<td>.191</td>
<td>2.43E-02</td>
<td>1.28E-02</td>
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<td>.124</td>
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<tr>
<td>Q15</td>
<td>.771</td>
<td>.179</td>
<td>2.76E-02</td>
<td>2.82E-03</td>
<td>-1.10</td>
<td>.127</td>
</tr>
<tr>
<td>ERECVD</td>
<td>-6.48</td>
<td>.122</td>
<td>-3.78</td>
<td>2.37E-02</td>
<td>-2.07</td>
<td>-2.0E-02</td>
</tr>
<tr>
<td>Q14</td>
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<td>.255</td>
<td>-2.67</td>
<td>-2.01</td>
<td>-5.8E-02</td>
<td>.357</td>
</tr>
<tr>
<td>Q4</td>
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<td>-7.89</td>
<td>8.81E-02</td>
<td>-1.53</td>
<td>.114</td>
<td>7.78E-02</td>
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<tr>
<td>Q2</td>
<td>-1.72</td>
<td>-6.37</td>
<td>.355</td>
<td>.286</td>
<td>-6.7E-02</td>
<td>9.41E-03</td>
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<tr>
<td>Q12</td>
<td>.244</td>
<td>.605</td>
<td>6.94E-02</td>
<td>-1.24</td>
<td>-1.24</td>
<td>1.65E-04</td>
</tr>
<tr>
<td>Q3</td>
<td>4.70E-02</td>
<td>-1.11</td>
<td>.738</td>
<td>5.42E-02</td>
<td>-2.6E-02</td>
<td>-1.13</td>
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<tr>
<td>Q5</td>
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<td>1.44E-02</td>
<td>-6.96</td>
<td>8.59E-02</td>
<td>.187</td>
<td>-2.26</td>
</tr>
<tr>
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<td>4.27E-03</td>
<td>.622</td>
<td>-2.9E-02</td>
<td>.171</td>
<td>9.21E-03</td>
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<tr>
<td>ESENT</td>
<td>-3.04</td>
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<td>-1.17</td>
<td>-2.26</td>
<td>5.12E-03</td>
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<tr>
<td>YEARS</td>
<td>8.21E-02</td>
<td>4.90E-02</td>
<td>2.36E-02</td>
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<td>.139</td>
<td>.200</td>
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<tr>
<td>LEVEL</td>
<td>7.70E-02</td>
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<td>6.75E-02</td>
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<tr>
<td>Q13</td>
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<td>-3.6E-04</td>
<td>3.85E-02</td>
<td>5.33E-02</td>
<td>.772</td>
<td>8.09E-02</td>
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<tr>
<td>Q11</td>
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<td>-.508</td>
<td>-9.4E-03</td>
<td>-7.9E-02</td>
<td>.588</td>
<td>6.15E-02</td>
</tr>
<tr>
<td>Q10</td>
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<td>.433</td>
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<td>-9.8E-02</td>
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<td>.125</td>
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<td>Q7</td>
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<td>-.216</td>
<td>-4.4E-02</td>
<td>2.72E-02</td>
<td>-4.6E-02</td>
<td>.851</td>
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<tr>
<td>Q9</td>
<td>.286</td>
<td>.208</td>
<td>7.84E-02</td>
<td>.233</td>
<td>.257</td>
<td>.527</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

Table 4 presents the mean average and standard deviation of item responses in each subscale. The Presence/Value subscale, for example, was determined by averaging the responses to questions 1, 3, and 5 (1.9726). Averaging responses to questions 2, 4, and 12 similarly created the Resistance subscale (2.4886), while the Overload subscale was an average of responses to questions 6, 8, 14, and 15 (2.3596).
Table 4

Reduced Subscales Through Factor Analysis and Questionnaire Items

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Questionnaire Items</th>
<th>$X$</th>
<th>$s$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence/Value</td>
<td>1 3 5</td>
<td>1.9726</td>
<td>.8378</td>
</tr>
<tr>
<td>Resistance</td>
<td>2 4 12</td>
<td>2.4886</td>
<td>1.0524</td>
</tr>
<tr>
<td>Overload</td>
<td>6 8 14 15</td>
<td>2.3596</td>
<td>1.0991</td>
</tr>
</tbody>
</table>

Company A Survey Data

Of 59 managers at Company A to whom surveys were mailed, 56 responded, for a response rate of 94.9%. Of that number, 45 managers were men and 11 were women. Demographically, 14 identified themselves as senior managers, 30 as middle managers, and 9 as junior managers. An additional three claimed “other” as their managerial level, some writing on the margin of the survey that they were “supervisors.” The largest percentage of respondents, 39%, had served as managers for 2 to 5 years, with almost 18% serving for 6 to 10 years. The percentage of those who had been managers less than 2 years and those who had served in managerial positions more than 15 years were identical, slightly more than 14%.

On average, the largest percentage of respondents, over 30%, claimed to receive between 21 and 30 e-mail messages daily, while 25% said that they received between 31 and 40 messages each day. That same percentage claimed to receive more than 40 messages daily. Managers from Company A send a smaller number of messages than
they receive. According to the survey, 44.6% send an average of 11 to 20 e-mail messages every daily, while only 3.5% say they send more than 40 messages a day.

A large majority, 87.5%, strongly agreed that their daily work requires them to use e-mail, with the remainder agreeing with that statement. Moreover, more than 89% agreed or strongly agreed that sending and receiving e-mail is important to their work accomplishment. E-mail appears to have been adopted by the managers of this organization, as half disagreed with the statement, “I do not enjoy using e-mail as part of my job,” and over 21% strongly disagreed with that statement. No one in the survey believed that communicating was easier before the advent of e-mail. In fact, 78.5% disagreed or strongly disagreed that “communicating at work was easier before we began using e-mail.”

Virtually all managers enjoy using computer technology. Only one respondent was undecided on that issue. On the other hand, 60.7% of respondents disagreed or strongly disagreed that they prefer obtaining information through e-mail than through personal contact. In other words, a majority expressed a preference for receiving information interpersonally rather than through electronic means.

Exploring the possibility of information overload from excessive e-mail, the survey asked if the ease of sending e-mail messages might contribute to excessive use of that technology. More than 80% agreed or strongly agreed with that assertion. Almost 84% agreed or strongly agreed that there are times when they feel overloaded with the number of e-mail messages they receive. That may be explained in part because 62.5% agreed or strongly agreed that they feel they must respond to e-mail messages sent to
them. Additionally, 75% agreed or strongly agreed that they sometimes feel overwhelmed by the amount of information received by e-mail. Even more, almost 84% agreed or strongly agreed that there are times when they feel overloaded with the numbers of e-mail messages they receive.

As a result of those e-mail messages, 35.7% of respondents agreed that they feel stress from information overload, while 14.3% strongly agreed with that statement. On the other hand, a fairly significant 28.5% disagreed that they feel stress from information overload, with another 8.9% strongly disagreeing.

Whether company policy should be instituted to aid in the appropriate use of e-mail, the survey asked if the company does not need a policy about how people should use e-mail. To that statement, 62.5% disagreed or strongly disagreed, indicating a belief that an e-mail policy might be helpful. Slightly more than 19% agreed or strongly agreed that a policy is not needed. Finally, to ascertain how e-mail might be influencing interpersonal communication, the survey asked whether e-mail interferes with more personal, face-to-face communication. While 19.6% were undecided on that issue, 39.3% agreed or strongly agreed that it did interfere, and an almost equal number, 41%, disagreed or strongly disagreed.

Correlations on Subscales

Using the Pearson correlation coefficient, the researcher discovered what relationships, if any, existed between each pair of factors: presence and value of e-mail, resistance to information technology, and information overload in respondents. Those
factors were determined through factor analysis of all questionnaire items, and finding which items grouped or clustered. The Pearson correlation indicated no statistically significant correlation between each of those three factors for respondents at Company A. Table 5 shows the results.

Table 5

Correlations among Subscales at Company A

<table>
<thead>
<tr>
<th></th>
<th>Presence</th>
<th>Resistance</th>
<th>Overload</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Presence</strong></td>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>-.020</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed) $p \leq$</td>
<td>.</td>
<td>.885</td>
</tr>
<tr>
<td><strong>Resistance</strong></td>
<td>Pearson Correlation</td>
<td>-.020</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed) $p \leq$</td>
<td>.885</td>
<td>.</td>
</tr>
<tr>
<td><strong>Overload</strong></td>
<td>Pearson Correlation</td>
<td>.244</td>
<td>-.092</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed) $p \leq$</td>
<td>.069</td>
<td>.498</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>56</td>
<td>56</td>
</tr>
</tbody>
</table>

According to the data in Table 5, no statistically significant relationships were observed between the presence or amount of e-mail and respondents' experience of information overload, nor between respondents' resistance to information technology and their experience of information overload.
Gender and Information Overload

An additional area studied was the influence of gender on the presence and severity of information overload. In other words, do male and female managers suffer differently from information overload caused by potentially excessive numbers of e-mail messages? To determine this influence, the researcher performed an independent t-test, examining the two groups, men (n=45) and women (n=11), and comparing their response to information overload. The results were $t(54) = -1.286$, showing no statistically significant effect of gender in respondents at Company A on the experience of information overload. Similar tests were performed comparing male and female managers at this organization to determine whether differences existed between these groups and the presence and perceived value of e-mail. Those results were $t(54) = -0.849$, again indicating no statistically significant effect of gender on that subscale. Finally, to determine if men or women had a greater tendency to resist information technology, a t-test revealed $t(54) = 0.981$, again, no statistically significant effect. Overall, the survey responses of male and female managers at Company A showed no statistically significant differences in their response to e-mail, their resistance to information technologies, and the presence or severity of information overload.

Company A Qualitative Data

The survey concluded with an open question about whether e-mail contributes to the experience of information overload in colleagues. The wording of that question was
designed to allow individual managers to respond about their colleagues and offer assessments about how “others” may experience information overload. Of the managers who responded to that question, 91.3% believe that e-mail does contribute to colleagues’ information overload.

**Response to Information Overload from E-Mail**

“Absolutely,” one answered. “It is easier to ‘shotgun’ messages than to decide who really needs the info.” Many managers repeated concerns about messages that are sent without discrimination throughout the organization. One replied that “some purposes for e-mail tend to be other than accomplishing work. These include ‘CYA’ [Cover Your Action] and ‘look what I did.’ I delete most messages [like that] without reading their content.” That manager illustrated his dilemma by admitting to having 339 unread messages in his inbox. “I could use advice on how to manage this.”

One middle manager commented that the ease of distribution lists “and the ‘CYA’ aspects of copying the world leads to unnecessary e-mail messages. These nice-to-know e-mails tend to overload the individual, and the must-know e-mails become somewhat lost in the details.” That scenario could be especially harmful to an organization where information is critical to its business advantage. Another middle manager seemed to recognize that danger in his comments about e-mail usage in the company. “Too much info can detract from doing the primary job. Some ‘FYI’ [For Your Information] e-mail would be better if it was put into an info source where it could be ‘pulled’ by an individual, rather than ‘pushed’ onto the masses.”
Ironically, a middle manager who claimed to receive more than 40 e-mail messages daily believed that creating CYA messages may be an advantage of e-mail:

E-mail is a great tool for two reasons: (1) It allows shy or passive individuals to speak out to a group, but never ‘in front’ of a group, and (2) allows senders to create a CYA paper trail. Unfortunately, e-mail is abused to communicate the simplest requests or questions.

While e-mail was perceived as beneficial because of its ability to keep a record, or paper trail, the greatest burden, this manager felt, comes from the ease of communicating with many people at once. “Unfortunately the reply’s [sic] become rather burdensome and inefficient, compared to person-to-person conversation or meeting.”

Within senior managerial ranks, an individual who claimed to receive more than 40 messages daily complained, “It is too easy to copy folks, so I often get cc’d [carbon copied] on stuff non-critical for my job.” That manager was clearly frustrated by the expectation that e-mail messages should receive immediate attention. “I often have heard the phrase, ‘Have you gotten my e-mail?’ ‘No, when did you send it?’ ‘Ten minutes ago.’ Ugh!”

The perception that many messages are sent for purposes other than work accomplishment does cause concern among many managers, although one senior manager sounded understanding. While acknowledging that e-mail may contribute to information overload, he commented that people in the organization “do not realize the overload factor mundane messages place on manager’s time. To their defense,” he
added, “I am not aware of specific e-mail sensitivity training as such.” Very little was included in anyone else’s comments specifically regarding such training.

Several of the managers stated that their position in the organization plays an important role in how much e-mail they receive, what types, and how they should handle that e-mail traffic.

The number of e-mails received per day is dependent on job function and also on the stage of a project. Also, some e-mail senders like to copy many people, and some receivers like to reply to everyone on the address list, whether they need it or not. This isn’t always bad, because you may receive insight into an issue from unlikely sources.

Another agreed that “the nature of our competitive business environment is that people are called upon to do, be aware of, and deal with more [information] than ever before.” Rather than complaining about information overload caused by e-mail, then, that middle manager said, “E-mail helps me meet this challenge.”

Dealing with more information than ever before was a concept that others developed in their open question responses and interviews. “E-mail indiscriminately draws individuals into more situations than face-to-face contact would allow,” commented a junior manager. “This can force an individual to try to deal with more situations than he or she should handle, causing higher than normal amounts of stress.”

Among the few comments that disagreed with the contribution of e-mail to information overload came from a senior manager who has been a manager for more than 15 years. “As a controller of a large group of people, I can scan more information online
faster than when I used to receive a hard copy in the mail. Also, the response is immediate and not a day or two later.” Another senior manager who believed that the information he receives through e-mail is valuable and important to his work also disagreed:

We are more productive, better informed, and can react better for our customers, but I have to spend 1-1½ hours early every morning before the workday starts to clear the e-mail. I would not go back to the old days.

Clearly, then, some individuals at Company A report that e-mail is a powerful tool for them to accomplish all the work required of them.

In the in-depth interviews, transcripts of which are at Appendix D, managers reinforced many of these same issues. “It’s a wide open pipe,” posited Timothy, a senior manager. “Anybody can pose a question to anyone. There are few rules.” The rules that do exist in Company A were said to emanate from the published corporate core values of professionalism, respect, and perseverance. Acknowledging the broad nature of these values, he added that they are meant to cover communication, “and e-mail is just another form of communication.”

The “wide open pipe” was felt keenly by Simeon, who was recently promoted to his middle manager position: “There was a huge increase in the amount of e-mail I received . . . because you’re getting mail from all the people who work for you, plus management issues laterally across the business. And then you’re given a lot more information.” That individual reflected on an earlier position in a large organization where “high level people always had [assistants] screening messages, so our [Company
vice presidents probably need someone to help them screen all the messages they receive.”

Mindy described herself as “devoted to using e-mail,” because it is “like a third arm, an extension of everything I do here.” A middle manager, she uses e-mail much more than any other communications tool, she said, to include the telephone. She admitted that she receives about twice as many tasks as she did even 3 or 4 years ago, “but it brings them in quicker so I can resolve them quicker. It’s good for quick communication and quick feedback.”

Her “third arm” comment is echoed by Lloyd, a senior manager who claimed that e-mail was indispensable for getting information to a lot of people.

For example, just this morning I saw something that happened, and I sent an e-mail [to my team] that said, ‘Look, something’s not right and I don’t know just what. We need some dialogue on this.’ And so we have an e-mail dialogue. We have people in my organization all over the country, so it’s tough to get everybody in the same room, so it [e-mail] works great.

The researcher discovered that numerous managers reported being dependent on e-mail for quick dissemination of information to many receivers, although they also confessed to feeling stress because of the volume of e-mail they regularly receive.

**Stress and Overload**

The numbers of e-mail messages that the interviewed managers claimed to receive daily ranges from 20 to 30 per day to “probably about 100 a day.” Interestingly,
one middle manager, Marge, said she receives between 20 and 30 a day but was most concerned about her supervisor. “I suppose he gets over 100 a day. I know he’s overwhelmed with e-mail.” In fact, her supervisor admitted to receiving approximately 45 to 55 messages daily, and he acknowledged that “it used to put me in stress from overload, but no more.” He expressed an ability to quickly scan messages and delete unnecessary ones.

Most managers claimed to feel some stress from information overload caused by e-mail. The numbers of messages and time spent on e-mail management seems to contribute to that stress. Simeon elaborated on how he handles the e-mail messages received and how he feels about that e-mail:

The Information Age allows us to become so emdent at getting out tasks that we quickly load people up. That can be good or bad. As a business, we can accomplish more, but it comes at a price, when people work more intensely or work longer or work harder. I spend about a third of my day handling e-mail, at least two hours each day. I handle e-mail first thing in the morning, and a couple of hours later I’ll work on it some more. Then towards the end of the day, around 6 or 7 o’clock, when people [in other parts of the country] are trying to get things done, you’ll get a slug of them again. E-mail is so constant and oppressive, that some people take their laptops with them on vacation. I did this last week, and I would every other day download my e-mail after everyone went to bed. I’d spend an hour or two getting through those e-mails to flag the ones that required some
action. It was not like I did a lot of business while on vacation, but I was just keeping up with it.

This manager’s attitudes could be seen in his assessment of e-mail as “oppressive” and responsible for “quickly load[ing] people up.” Moreover, he admitted that he feels stressed from the amount of e-mail he receives, and often he works late because “you’re under constant pressure to keep your folders pared down.”

Since these interviews were conducted during the summer months, several had taken vacations recently and commented on the numbers of e-mail messages that awaited them if they did not take a laptop on vacation with them. Lloyd returned from vacation to find 140 messages in his inbox. His method for handling those messages was to scan quickly and delete whenever possible. During times of handling such large numbers of messages, he appeared ambivalent about his feelings of overload:

I only feel overwhelmed when I get back from vacation. . . . I was going through my e-mail, and I read them all at once. I leave them in my inbox if I need to get back to them and get rid of the ones quickly if I don’t. I bet 15% of the ones I get are organizational items, and I don’t care about that, so I just delete, delete, delete. I feel overwhelmed, because half the ones I get are information. The other half I usually respond to or [are] things I asked for. I don’t think I feel so overwhelmed. If something’s just going to sit there for info only, I kill it. My colleague next door is always having 100 or 150 messages in his inbox. He goes and cherry picks which ones he’s going to read first, but I just go and start at the bottom and read to the most current. If there’s nothing important, I just delete it.
These comments appear contradictory, although they point out that initial feelings of anxiety or stress about large quantities of e-mail messages may quickly pass as the manager handles adroitly those messages.

Marge, who had expressed concern about her supervisor’s overwhelming number of e-mail messages, believed that assistants to more senior executives could help the senior managers handle their e-mail. She did not believe that she needs an assistant herself, suggesting that her e-mail volume is “manageable, it’s information I need.” However, she does print long attachments and take those home with her to read at night. Such methods for handling e-mail appear to help some managers deal with the large volume of messages they receive in the office.

“I feel stressed by e-mail; I wouldn’t necessarily say I feel stressed out,” explained Simeon. He acknowledged that managers’ responsibilities are at times burdensome, and the two hours a day he spends reading, responding, filing, deleting, and managing his e-mail does create “a lot of pressure.”

To handle that pressure, several managers admitted carrying laptops while traveling on business or on vacation in order to keep up with e-mail flow. Mindy recently took a one-day vacation without a laptop and returned to 169 e-mail messages in her inbox. “I get a physical response sometimes, kind of a knot in the stomach. It’s tiring emotionally, but it’s only momentary. Then after two or three minutes scanning it, you see that it’s not so bad.” She felt a similar response the day before the interview, when she returned from several meetings and found 49 messages waiting in her inbox.
I have moments when I feel overwhelmed. . . . You think, ‘Oh, my gosh. Then I do the first quick pass and scrub through them. Then I see that of those 49, only about eight or nine are things I really have to spend time on.

She claimed to spend, on average, 1 ½ to two hours each day on her e-mail and saw that time as valuable and productive. “A lot of it is transmitting . . . spreadsheets or a document, so e-mail becomes a support tool to disseminate that information.”

**Types of E-Mail Received**

Almost all e-mail messages received by managers in Company A are work-related, internal messages, that is, messages that originate inside the organization. The most extreme statement of this was from Marge, who claimed that “all my messages are internal,” while others stated, “I get about 98% internal,” “Maybe 10% is external right now,” and “Probably 80% is internal and about 20% external from customers.” Boyd, a senior manager, believed that his messages are “probably 90 or 95% internal,” although he admitted that e-mail is “a great way to communicate with customers.”

Virtually all managers at the two organizations stated that they receive almost no unsolicited messages—spam—at work. According to Marge, “They [the company’s network administrators] must stop [unsolicited e-mail]; I don’t get that at all.” Simeon admitted that some people in the company “can’t resist sending a joke that they receive, but we put out a policy that that kind of stuff is not right. It takes up time and [computer] memory, both of which cost money.” The policy to which he referred is a broad one,
encompassing all organizational communication and emphasizing the company’s values of professionalism, respect, and perseverance.

Boyd, who receives between 45 and 55 messages a day, claimed to receive no unsolicited e-mail. He does receive “some things I’ve signed up for—listservs—but I don’t even look at those now. You just get inundated with all that crap.”

Handling E-Mail

Mindy, a middle manager, performs “a quick first pass” of the e-mail inbox. She discussed her method for handling numerous e-mail messages:

I scan the subject and the first line, but sometimes I have to open them up. It all depends on who it’s from. If it’s from [my boss], I tend to read the body of it a little closer. By the end of an hour, it’s down to a short list.

The importance of reacting to messages differently based on the subject or the sender is repeated often in the interviews. Timothy, a senior manager, cautioned:

You can’t spend equal time on all messages... Some of your messages will have negative job consequences if you don’t respond to them. So I read the first line or two and then delete. That’s an advantage to [Microsoft] Outlook, that you can read the first couple of lines without opening up the entire message.

He receives an estimated 40 messages a day, although he expected that number to double within a month because of the nature of his position and the growth in the company. He also resorts to printing longer messages and working on them at home.
Boyd sits on the management team at Company A. Describing e-mail as “a blessing and a curse,” he said that he has learned to accommodate his schedule to the expected e-mail load. The “blessing” of e-mail, he explained, is its speed, low cost, and efficiency in sending a message to many people at once. The “curse” is its abuse, to include sending long documents via e-mail “instead of using copiers that are designed for low cost-per-page reproducing.” In addition, he resents “the expectation that because it’s on e-mail, it’s going to be immediately reviewed. The other thing [I resent] is that even if you’re out of town, if you haven’t read it and acted on it, shame on you.” Therefore, when he is away from the office, he uses a system called auto-office that announces he is away from the office. Anyone needing immediate action is urged to call his cell phone or contact his assistant.

Moreover, when Boyd has been away from the office and anticipates a large number of messages in his inbox, “I try to come in a little early and have some quiet time. I can scan the messages and automatically delete a lot of the messages. Then I’m down to about 35 [messages], and about a third of those are FYI that you can scan and chuck.” Of the remaining messages, he estimated that his assistant prints out half for further work, and he responds directly on e-mail to the remainder.

None of the managers interviewed used any filter, either technological or human. Each felt the need to review all messages sent to him or her without restriction, so while some stress from information overload may be a reality, managers feel a greater desire to have control over the information being received. Lloyd admitted to feeling annoyed at organizational personnel announcements. “On the other hand,” he confided, “I really
want to know.” Additionally, most managers did not favor restrictive policies on the proper use of e-mail and how e-mail should be handled within the organization. Lloyd asked, “What does ‘proper’ mean? [E-mail] is a communications tool. It’s [use of a policy] just too restrictive.” Simeon, who felt that the word “policy” implied dictating, echoes that attitude. “I think something better would be guidelines or recommendations or suggestions, some tips that might include stuff like the basics, like reading your mail daily or how to use Outlook.”

Boyd preferred the words “practice” or “guideline” to describe how policies could be implemented in the company. He urged:

Ask people to think in terms of the receiver. Is e-mail the best way to communicate with them? Keep messages short and send out a notice that says a longer message is coming in regular mail. E-mail is just another form of communication, so think about what you’re communicating, and who you’re communicating it to, and what’s the most appropriate way to communicate it.

Mindy confessed that she was unable to imagine how the company could implement a policy, since “every manager has his own take on what he wants to see.” She shares her expectations about communication with her team and tells them not to send her copies of information messages unless her being surprised might have negative consequences. Therefore, she asks that her subordinates use judgment in keeping her “in the information loop.”
Gender

There are few comments in the in-depth interviews that would distinguish the male managers from the female ones. Suggestions from the women on how to improve e-mail effectiveness included writing concisely, ensuring that everyone read and respond promptly, and using judgment when replying, that is, not using “reply to all” indiscriminately. Those suggestions were offered by many of the men as well, who offered the following: “To make e-mail more effective, it would have something to do with improving people’s writing skills.” “People complain about others’ misusing ‘Reply to All.’” “Don’t always ‘Reply to All.’” “Think about the message you’re delivering, to whom, and how you want it received, and then ask yourself, what’s the best method? It’s not necessarily e-mail.” Most of the comments by male and female managers at Company A expressed quite similar attitudes towards and actions with e-mail.

Marge emphasized the importance of maintaining personal relationships with others in the organization. “It’s easier to jot off an e-mail, and we trade e-mails back and forth, and it can get out of hand.” She suggested that there are times when a face-to-face conversation is more appropriate than sending an e-mail message. Several men, though, expressed similar sentiments.

Lessons Learned

Sensitivity to when and how e-mail should be used was a refrain in many of the interviews. Even by those who were positive in their attitudes towards e-mail, there are
times when e-mail was seen as inappropriate. Mindy commented, “I’ve had a couple of occasions where I’ve had to step in and say, ‘Stop sending e-mails. Get together and do it verbally.’” The concern expressed was that people may communicate through e-mail when other methods might be more appropriate. Timothy illustrated: “When somebody’s sitting at the desk typing, and you’re at your desk typing, for God’s sake, pick up the phone and talk to each other.” In other words, there appears to be among many managers a realistic understanding for the need for human interaction and involvement.

Marge sensed the potential danger of losing that involvement, seeing e-mail as “taking away a lot of face-to-face. Overall it’s bad, because you don’t establish the relationships: you don’t bounce ideas off other people as much as you have, and you don’t have informal conversations.” One major result of the perceived misuse of e-mail that was cited by several informants was that lack of personal contact. It is that misuse that, according to Marge, “stops us from having good relationships with other people that we work with on a regular basis.” She may be evidencing some resistance to information technology as she went on to argue:

It’s quicker for me to pick up the phone and call and tell them what I need, as opposed to the time it takes to craft this message. I’m a little concerned that we think we’re saving time by using e-mail, but in essence, by the time we craft the message, it’s taken us twice the time as it would to have done it the other way.

Handling e-mail effectively is something that managers seem to learn while at their desks. As Boyd confided, “I’ve been on the job about two and a half years, and at first I felt that I had to read everything. Now I’ve become more comfortable, more confident.”
Company B Survey Data

Company B is a smaller organization than Company A, with only 21 managers. Of that number, two had been sent to Russia on business immediately prior to the conduct of the survey, reducing the sample size to 19. Of that number, 17 completed the survey for statistical analysis (n=17), although one additional survey was returned a month after completion of the analysis. The 18 ultimately returned surveys constitute 94.7% of the sample. Demographically, this organization is less diverse, with just one woman among its managerial ranks. Additionally, the managers are generally more senior than those in Company A, with 41% senior managers, 47% middle managers, and only 11.7% junior managers. A large percentage, 41%, had served at the managerial level for more than 15 years, with 23.5% claiming to have been a manager for 11 to 15 years and an identical number from 2 to 5 years. While 11.7% had been managers for 6 to 10 years, no one had less than two years' experience.

More than 94% of the surveyed managers agreed or strongly agreed that their daily work requires them to use e-mail. Only one respondent disagreed with that assertion. Moreover, more than 88% agreed or strongly agreed that sending and receiving e-mail was important to their work accomplishment. While nearly 59% disagreed that the majority of e-mail messages were not necessary for their work accomplishment, indicating that they felt that e-mail messages were necessary, a surprising 29.4% agreed or strongly agreed with that statement. Two respondents were undecided on that issue.
A large majority of managers at Company B, 70.5%, indicated agreement or strong agreement that they enjoy using e-mail as part of their work, while 23.5% were undecided. These numbers were reinforced by the 88% who agreed or strongly agreed that they enjoy using computer technology. In terms of unsolicited e-mail, 47% disagreed that they receive such unsolicited mailings, while 41% claimed that they did. One respondent strongly disagreed with that statement, and one was undecided.

There was an equally wide range of responses to the first survey item that probed the area of information overload. Slightly more than 41% agreed that sometimes they feel overwhelmed by the amount of information received through e-mail. On the other hand, over 35% disagreed or strongly disagreed with that statement, while 23.5% were undecided. A similar difference existed in responses to the item, “There are times when I feel overloaded with the number of e-mail messages I receive.” While only one respondent strongly agreed with that statement, nearly 59% agreed with it. On the other hand, more than 35% disagreed with that statement.

When asked if the ease of sending e-mail contributes to its excessive use, 70.5% agreed or strongly agreed. Moreover, only 11.7% agreed or strongly agreed that they prefer obtaining information through e-mail rather than through personal contact. Some 64.7% disagreed or strongly disagreed with that statement. Consistent with that response, almost 53% feel or strongly feel that e-mail interferes with more personal, face-to-face communication. Almost a quarter of the respondents disagreed with that statement, the same number that claimed they were undecided. There was significant agreement, though, when responding to whether communicating at work was easier before the
introduction of e-mail. Overwhelmingly, more than 82% said, no. Only one respondent felt that communicating was easier before e-mail.

Finally, 64.7% disagreed or strongly disagreed that they experience stress from information overload because of the number of e-mail messages they receive. Only 17.6% claimed to feel that stress, and 17.6% were undecided on the issue.

The largest percentage of respondents, 64.7%, said that they receive between 11 and 20 messages daily, while 17.6% claimed to receive 21 to 30 messages a day. No one said that he or she receives more than 40 a day. The managers of Company B send even fewer e-mail messages than they receive. According to the survey, fewer than 10 messages daily are sent by nearly 65% of the respondents, with 29% saying they send between 11 and 20 messages. Only one respondent sends 21 to 30 messages daily.

On the matter of a company policy regarding how people should use e-mail, 64.7% believe that the company does need such a policy, while only 23.5% believe that such a policy is unnecessary. Two respondents were undecided.

Correlations on Subscales

The Pearson correlation coefficient enabled the researcher to determine if any statistically significant relationships existed in Company B among the three factors. Those factors had been determined through factor analysis of all items for both organizations and discovering which items grouped or clustered. The Pearson correlation indicated no statistically significant relationship between each pair of variables for respondents at Company B. Table 6 shows those correlations:
### Table 6

**Correlations among Subscales at Company B**

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<th>Presence</th>
<th>Resistance</th>
<th>Overload</th>
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<td>-.132</td>
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<td>Sig. (2-tailed) $p \leq$</td>
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<td>Pearson Correlation</td>
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<td>Sig. (2-tailed) $p \leq$</td>
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<td><strong>Overload</strong></td>
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<td>Pearson Correlation</td>
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<td>Sig. (2-tailed) $p \leq$</td>
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Examination of the correlations indicates no statistically significant relationship for the managers of Company B between the presence or amount of e-mail and their experience of information overload, nor between the respondents’ resistance to information technology and their experience of information overload.

**Company B Qualitative Data**

Whereas 91% of managers in Organization A who responded to the survey’s open question were unambiguous that e-mail does contribute to information overload, managers from Organization B were much less definitive. Only 44% in Organization B
reported in the open question that e-mail seems to contribute to information overload, while 33% believe that e-mail does not contribute to overload

Response to Information Overload from E-Mail

Among those who believe that e-mail is not responsible for causing or exacerbating information overload, many cited the importance of e-mail to accomplishing their daily tasks. In fact, one middle manager called e-mail a “powerful business tool that has contributed greatly to our success.” E-mail’s contribution to both organizational and personal success is highlighted by a number of managers. Another middle manager admitted that e-mail, similar to other communications tools, “can be overdone, but how you manage the tool in large part determines stress and frustration.” That individual suggested that e-mail allows one to easily sort the messages according to sender, subject matter, and message priority, “deleting the others unread or waiting for a convenient time to read them.”

The manager’s need to manage quickly the influx of e-mail was a consistent refrain among managers at this company. One middle manager with between 11 and 15 years’ managerial experience insisted, “Overload may occur if the recipient reads and understands all messages. As with ‘snail mail,’ one must discriminate based on title [subject of message], sender, and perhaps a brief scan before reading/responding.” The suggestion, then, is that one answer to e-mail and information overload may be the individual and his or her ability to manage or sort the incoming messages.
A senior manager added that e-mail is just “another method for receiving and giving information.” That individual, who has more than 15 years’ experience as a manager, saw the advancement of computer technology as key to learning “to process more information in much shorter periods of time when compared to the years of ‘yesterday.’” He failed to elaborate on how he has learned to process information, although comments from a junior manager may illuminate those thoughts. Up-to-date information is important, she suggested, and it is “more readily available through the use of the Internet.” Decision-makers who need that information can receive it more rapidly through e-mail than through traditional distribution, and then “that person has the option to read the info or delete it. If it were a hard copy being distributed, the person may not see the information in a timely fashion.”

A middle manager with more than 15 years of experience as a manager claimed, “It’s simpler to sort and parse on-screen than it is to dig through a paper in-basket.” The speed and simplicity of e-mail, then, seems to lead many managers in this organization to doubt that e-mail contributes significantly to the experience of information overload. “E-mail is a quick way to effectively communicate a number of things on your ‘to do list.’ Whether you are away or at home you can get to e-mail and/or voice mail easily—generally speaking.”

Ironically, many of those same issues emerged in the survey comments of respondents who argued that e-mail could contribute to information overload. Several cited the ease of sending e-mail as a reason that information overload could be exacerbated in managers. “With the ease and ability of sending e-mail, and depending on
the type of manager . . . it [information overload] very well could take place,” wrote one junior manager. A middle manager added, “The ease of adding someone as ‘cc’ to an e-mail message ‘just in case they are interested’ contributes to the increased e-mail volume.” That individual insisted, however, that e-mail does not “significantly” impact information overload. He offered his thoughts on how to control information overload. “I find it helpful to quickly scan and screen messages, deleting those of little interest BEFORE reading them. If they are really important you will hear about it from a more urgent source first.”

A senior manager expressed a certain degree of ambivalence in his survey comments regarding the experience of information overload:

E-mail could be used as a way to cover yourself by sending it out to a lot of people you normally would not, but the receiver can determine whether or not to read or reply. Better safe than sorry causes better communication dissemination. That ability to send messages easily to many individuals led a middle manager to conclude, “The possibility of an overload situation could occur.”

A senior manager saw the issue of e-mail and information overload as an evolving one that is “more of a social issue vs. a company/policy one.” On the other hand, he posited, “We haven’t learned how to turn off other information sources and effectively use the e-mail tool.” That theme emerged from others, as well. Nonetheless, one middle manager wrote, “People tend to generate more [e-mail] messages, and to use it in place of other communication modes, such as staff meetings, where information is not just presented but discussed, even debated.” That individual believes that e-mail has an
alienating effect on people, for “even though they are literally awash with information,” they feel disconnected and unsure of what is important to the company. The problem, according to that manager, is not that e-mail is added to other sources to create overload. Rather, he believes that the problem results from e-mail’s being used to the exclusion of other more interactive means of communication.

A somewhat similar assessment of e-mail was found in a middle manager’s comment that e-mail “is neither good nor bad. If misused it could be bad. . . . It’s so easy to send a lot of material and go through and “cc” [carbon copy] people.” That individual added that e-mail could become a barrier to interpersonal communication. “There’s probably less face-to-face [communication] than is helpful,” he confided. “It makes it less likely that you’re going to have consensus or collegial type input into policy decisions. . . . E-mail is only a tool, not the tool.”

During his in-depth interview, Jack emphasized e-mail’s importance as a tool, exploring the value of e-mail and his personal experience with information overload. He described e-mail as “a tremendous timesaving tool,” going so far as to discuss carrying his laptop computer into meetings and checking on e-mail throughout. “We survive by e-mail,” he argued. “Without it, we couldn’t do a thing. . . . Probably one of the greatest assets we ever put in place is e-mail.”

Stress and Overload

In spite of the timesaving and survival aspects of this communications tool cited by several informants, e-mail is also the source of some stress among managers at this
organization, largely because of its contribution to information overload. Ed, a senior manager, related his experience returning from a trip and finding 160 e-mail messages in his inbox. “It can be depressing,” he admitted.

When I got back to those 160 messages, the initial reaction is that it’s an overload of work. You think, “Oh, no, it’s going to back me up all week,” and you get all those initial feelings when you see those messages. When I see messages that I don’t need, those I feel I can get rid of easily, and I don’t have to respond to those. My initial reaction is that the next time I’m on vacation, I’ll take my laptop.

Ed regularly spends one and a half hours or more on his e-mail management each day. He showed the researcher his e-mail inbox of 108 messages. “That’s 108 items that I might have looked at, but I haven’t processed what I’m going to do with them. It’s depressing because I have to determine what I’m going to do with them.”

Doug, a middle manager, spoke of e-mail as “a helpful tool,” but he described his reaction after returning from vacation to a full e-mail inbox:

The only time I feel overwhelmed is after I’ve been gone a number of days and you look and see that you have 57 messages to respond to, or something like that. That’s the time when you ruthlessly sort through them and discard the ones you don’t—some of them I don’t even read.

Echoing the notion of e-mail as a communications tool, Mike, a senior manager, spoke of e-mail as a “tool [that] makes some of the communications a little bit more efficient and it makes them a little bit more direct, but there’s a burden; we’re sort of overburdened
"with it." According to Mike, the burden is the addition of e-mail messages to those from other communications media that saturate the individual:

E-mail used with Fax machines and cell phones and things like that. It’s made so much more [information] available, so much more convenient. I think it’s the combination of things that causes some stress. I don’t think there’s any question about that. . . . I’d probably say I get less stressed on e-mail than on voice mail. I think the reason is that I probably have a little more control over e-mail than over voice mail. With e-mail I can scan, delete, move over, so there’s a little less stress with this [e-mail] than with the other [voice mail], but I don’t think I get more stressed with e-mail than with anything else.

That last statement may be especially significant, since Mike had recently returned from three weeks’ vacation in Europe without his laptop and had 246 messages waiting for him. He acknowledged that processing all those messages took several hours. Normally, he admitted, he spends one and a half hours each day on his e-mail, “and that includes composing and reading.”

While speaking of the burden that e-mail may place on some managers and the stress it brings, Mike added that the highest level of frustration is reserved for those times “when the network goes down and you can’t get to your e-mail.” He emphasized e-mail as a tool that organizational managers use, not as a problem to overcome. “E-mail becomes a concern and a frustration only when it’s not available. It becomes a part of all that you do.”
A middle manager had worried in the open survey response that e-mail might add to the stress already placed on him and his colleagues. "They [other managers] are already unable to handle the stress in their jobs." Others offered similar comments, claiming that the stress from overload was not exclusively from e-mail. Rather, e-mail was said to often alleviate that stress. Jack added his thoughts on stress and the organization's use of e-mail:

People are overwhelmed by work. E-mail's just a tool that's being used, okay. As far as being overwhelmed or stressed, I am, but it's because of the job and not the e-mail. E-mail's helping me try to keep up. It's not the e-mail that's doing it. Everybody's trying to do more with less—less money, less people—and that's what causes the stress. Again, if I didn't have e-mail, with the stuff I have going on, it would be much worse.

He used the idea of survival to describe his attitude towards e-mail. "We survive by e-mail. Without it, we couldn't do a thing. . . . It opens the door to where we can communicate with our clients and our corporate office and sites that we have scattered around the country and the world." Jack concluded by saying that if the e-mail system were to cease functioning, "Stop the whole place and fix the mail. It's very important to us."

Types of E-Mail Received

Similar to qualitative results found with managers of Company A, managers from Company B receive almost no spam, or unsolicited e-mail. According to the manager
overseeing information technology for this organization, "Our site down in New Orleans [the organization’s headquarters], our firewall, filters out a majority of that, so we get very little spam.” Mike agreed, admitting that he gets a lot of unsolicited e-mail at home, “but none at work.”

All managers agreed that the majority of e-mail received is internal to their organization, usually around 90% of all messages. “Probably 90 to 95%—say 90%—are internal,” said Jack. “Another 10% come from key vendors who send me notices. This is mail that I’ve asked to be on so I know what’s going on, and that’s very advantageous to me.” Doug agreed that his e-mail was predominantly “in-company. . . . I’d say fewer than 5% are from outside. Trade associations, notices about meetings, things like that.”

Sue, a junior manager, handles news articles that are published about the industry and key competitors. She uses a listserv, or electronic mailing list, with which to share important news with other managers. “I’ve signed on to more and more news services to get current news. I get almost no unsolicited e-mail; advertisements come in occasionally, but not much at all. Most of my e-mail is internal.” George, a middle manager, receives a small percentage of e-mail, “not more than 10%,” from professional societies to which he belongs, with the rest being internal to the organization. That response is consistent with Ed’s comments:

I don’t get any outside stuff. It’s all internal to the corporation. Now that means all over the country and in Russia, too. I’m on one list, and they send me a newsletter once in a while, but other than that it’s all internal.
The types of e-mail messages that managers receive may, in part, explain their attitudes towards filters and may determine how they handle their messages.

**Handling E-Mail**

To understand how managers attempt to control or overcome information overload, one might examine how they handle their e-mail messages. Mike returned from an extended vacation to find 246 messages in his inbox. His normal load of incoming messages averages about 20 per day, he said. When asked how he handled those 246 messages, he replied:

When I came back from vacation, for example, I sorted on the “From” box, and then I looked at all of those from [another manager] who sent me a lot of articles. So I probably eliminate 50 right off the bat, because I'd already seen most of those. By looking at the subject line, a lot of it was redundant, things that I already knew. There are other things that had already transpired, like meeting notices, so I ended up whipping my way through that. So then in the course of a couple of hours, I probably looked at a hundred of them. I use a procedural type approach towards it to say, Hey, sort through this, what do I have here? What can I get rid of? What should I save? How should I do this? It [e-mail] replaces a lot of things that I would have used to keep current on things.

Most managers in this organization have learned to handle their e-mail accounts quickly and efficiently, and most try to keep their accounts current. Jack reported, “E-mail is a tremendous timesaving tool. I try to stay on top of the e-mail.” Sue added:
I leave e-mail up all day, and if it’s a simple request or response, I’ll respond to the message right at that point. If it’s not important, I’ll read it and delete it at that moment. . . . Then I handle my mail throughout the day, when messages come in. Jack likewise keeps his e-mail program operational throughout the day. “It notifies me when I get incoming mail, so I can even be over in the spreadsheet or word processing [program], and with my default, I can just bring this mail up.” Once he accesses his mail, he said, “I can look at it very quickly and get a good idea of who it’s from. I just hit delete and not even read it. One advantage of [Microsoft] Outlook is that you can just read the first line.” Since he receives about 30 to 40 e-mail messages a day, and since he claimed to create or respond to another 20 or 25, that quick method of handling e-mail seems to be a survival technique for busy managers like Jack.

Doug scans his inbox and mentally sorts messages by author and by subject. “If I see a message from my boss or one about a particularly important project that may need prompt input, those I look at right away.”

None of the managers interviewed acknowledged using filters, either technological or human. In other words, they did not attempt to have assistants screen their messages, nor did they choose to establish filters for their personal e-mail accounts. They preferred to control what information they could read, recognizing the importance of information for competitive advantage. Sue admitted, “People are sometimes hungry for information,” while Ed asserted, “E-mail has allowed businesses to expand in areas of efficiency. It’s allowed more information to get out to people that probably would not
have gotten that information in the old world.” Therefore, no manager was willing to filter out messages without having the opportunity to at least scan them first.

Finally, Ed, a senior manager, confessed that he was “still a hard copy guy.” He confided that he would read his e-mail messages and print out what he believed to be important. He did recognize that “eventually I’ll probably have to switch to folders.” Sue knew of another colleague who similarly refrained from using folders. That colleague was said to maintain 500 messages in the inbox. “How can you find anything?” she asked rhetorically. “I got him to put things in folders, and now he can find things. I was like that once.”

Gender

Company B has only one female manager, Sue, and so gender differences may be less generalizable at that organization. Still, her attitudes are consistent with female managers in Company A. She had the strongest feelings of all those interviewed at Company B about the potential misuse of e-mail to avoid personal contact:

I’m kind of bothered by the fact that e-mail may be keeping people from talking to one another on the phone or face-to-face. A lot of times it’s sort of irritating, because you could pick up the phone. Those are the things that are sort of bad. Some people want to use e-mail instead of talking to you. That puts them off in a corner. . . . That’s bad for our communication skills. E-mail has taken the place of people talking to one another.
That attitude is expressed by some of the other managers, but without her passion. George, for example, stated, “I am concerned ... that it can become a barrier to interpersonal, face-to-face [communication].” Ed added that “some people send things on e-mail that they should communicate by phone, and ... it [e-mail] is not as personal.”

Other than the degree to which men and women expressed their concern over the impersonal nature of e-mail, there was no noticeable difference in their use of and attitudes towards e-mail, as expressed in their in-depth interviews. Neither was there any indication that gender might influence the presence or severity of information overload in the managers interviewed.

**Lessons Learned**

“We’re still pretty tied to paper,” admitted Mike, “and we haven’t decided on any guidance or policy about where we’re going, where we want to go [with e-mail].” Ed, who believes that “policies are always needed,” echoed that statement. The difference between the two is that the first is organizational, and the second anticipates individual needs. “People don’t always follow the policy ... but when it becomes a problem, then you fall back on the policy,” Ed asserted.

On the matter of company policies to regulate appropriate use of e-mail, Jack agreed:

Policy is needed. You can’t run an e-mail on this scale without a policy, because it’ll get abused. We discourage—actually we prohibit—the use of e-mail for
personal use or [sending] little notices going all over the place, because it junks up the mail.

Establishing policies for the proper use of e-mail is worth serious consideration, according to almost all the managers interviewed at this organization. Those policies—Sue preferred the term “structure”—would establish the limits of acceptable use to preclude the possibility of excessive e-mail causing or exacerbating information overload.

On the other hand, according to Doug, “Given that we haven’t had much of an overload, my inclination would be to say, Let’s leave the policy for the time that it’s going to be needed.” George also disagreed with the need for some e-mail policy, although both these individuals recognized that e-mail could be misused or overused. Doug argued that while e-mail has saved time, “it can lead to a proliferation of messages.” George described another company where he worked that had a great deal of e-mail misuse. “A lot of unnecessary FYI [For Your Information] copies were sent,” he commented. Remembering the abuses at that organization, he explained, “Sometimes you’d get a lot of e-mail information, but it’s not always the stuff you wanted to know about. It’s a little like dying of thirst in the middle of the ocean.”

That statement—“dying of thirst in the middle of the ocean”—is an apt description of information overload, suggesting the abundance of information, yet without the ability to absorb effectively the necessary information. At this time, managers at Company B do not seem to be suffering seriously from that problem.
The Information Technology manager at Company B provided data from four managers, randomly selected, and the number of messages they received and sent during an average day, selected at random, and a representative week, also selected at random. The highest number of messages that any manager received, according to this objective review, was 33 in one day. The average daily number received among the four managers was 24 e-mail messages.

One manager sent 30 messages in a single day, the highest number among the four. Averaged among those four individuals, 20.5 messages were sent on a daily basis. These numbers of e-mail messages sent and received correspond closely to the numbers shared in both the surveys and the in-depth interviews, thereby neutralizing any possible bias in other data sources (Creswell, 1994). This between methods triangulation provides convergence of data results and reinforces the study’s findings about numbers of e-mail messages sent and received. The daily and weekly totals from the records review at Company B are in Table 7.
Table 7

Records Review of E-Mail Messages Received and Sent—Company B

<table>
<thead>
<tr>
<th></th>
<th>Received</th>
<th></th>
<th>Sent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day</td>
<td>Week</td>
<td>Day</td>
<td>Week</td>
</tr>
<tr>
<td>Manager 1</td>
<td>33</td>
<td>158</td>
<td>20</td>
<td>91</td>
</tr>
<tr>
<td>Manager 2</td>
<td>28</td>
<td>143</td>
<td>24</td>
<td>107</td>
</tr>
<tr>
<td>Manager 3</td>
<td>10</td>
<td>42</td>
<td>8</td>
<td>30</td>
</tr>
<tr>
<td>Manager 4</td>
<td>25</td>
<td>119</td>
<td>30</td>
<td>109</td>
</tr>
</tbody>
</table>

Combined Organizational Results

To determine if any change in the correlation among the variables would occur if the quantitative data for the two companies were combined, the researcher conducted a Pearson correlation among the three subscales with N=73. These combined organizational results illuminate whether there are general conclusions that might be drawn regarding the role of e-mail on information overload in managers. Those results are shown in Table 8.
Table 8

Correlations among Subscales Combining Companies A and B

<table>
<thead>
<tr>
<th></th>
<th>Presence</th>
<th>Resistance</th>
<th>Overload</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Presence</strong></td>
<td>1.000</td>
<td>-.028</td>
<td>.317**</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed) p≤</td>
<td>.</td>
<td>.817</td>
<td>.006</td>
</tr>
<tr>
<td>N</td>
<td>73</td>
<td>73</td>
<td>73</td>
</tr>
<tr>
<td><strong>Resistance</strong></td>
<td>-.028</td>
<td>1.000</td>
<td>-.077</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed) p≤</td>
<td>.817</td>
<td>.</td>
<td>.519</td>
</tr>
<tr>
<td>N</td>
<td>73</td>
<td>73</td>
<td>73</td>
</tr>
<tr>
<td><strong>Overload</strong></td>
<td>.317**</td>
<td>-.077</td>
<td>1.000</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed) p≤</td>
<td>.006</td>
<td>.519</td>
<td>.</td>
</tr>
<tr>
<td>N</td>
<td>73</td>
<td>73</td>
<td>73</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed)

The results of this test indicate a significant correlation between the presence and value of e-mail and information overload. No other correlation was found. Since this finding was different from the tests of each organization conducted separately, a linear regression was conducted to reveal what prediction might exist if an individual’s presence/value score were known. R-square, the coefficient of determination, indicates the relevance of that correlation. While it may be statistically significant, squaring the correlation shows that it accounts for only 10% of the variability, as shown in Figure 1. Therefore 90% of the variability with this relationship is not accounted for. As Mertens (1998) pointed out, there is an important issue concerning statistical versus practical
significance. While this correlation does show statistical significance, it appears to hold minimal practical significance, because it only accounts for a minimal percentage (10\%) of the variability.

In addition, an independent t-test was performed, examining all respondents, regardless of organization. Similar to the tests conducted on each organization individually, this test showed no statistically significant effects. The first t-test results
were $t(71) = -0.712$, indicating no statistically significant effect of gender on the presence and perceived value of e-mail. A second test compared all surveyed men and women to determine whether differences existed in their resistance to information technology. Those results were $t(71) = .900$, again indicating no statistically significant effect of gender on that subscale. Finally, a third $t$-test showed that neither men nor women had a greater tendency to experience information overload, revealing $t(71) = -0.657$, again, no statistically significant effect. When all the survey responses of the 61 men and 12 women at Companies A and B were combined, no statistically significant differences were found in their response to e-mail, their resistance to information technologies, and their experience of information overload.
CHAPTER 5: SUMMARY, CONCLUSION, AND RECOMMENDATIONS

The role of e-mail on information overload is complex, but this research sheds some light on how men and women who manage modern organizations handle e-mail. This chapter explores similarities and differences between the two organizations researched, with suggestions about why some differences may exist regarding their experience with e-mail and information overload. Following that discussion, each research question is discussed individually, drawing on both the quantitative and qualitative data. Conclusions are drawn that may suggest how and why managers respond to e-mail as they do. Finally, the researcher offers limitations of this research and recommendations for future research.

Summary Findings

The data suggest that organizational managers do use e-mail extensively for their daily work, and that the majority appreciates the advantages of computer technology. In general, the managers of the two organizations studied use various media for sending and receiving information, to include face-to-face communication and e-mail, and many acknowledge that they often prefer personal contact to e-mail communication. At the same time, managers at both organizations agreed that the ease of sending e-mail messages does contribute to the excessive use of e-mail. Consequently, it may not be surprising that information overload is perceived as a reality among many of the managers surveyed and interviewed. At Company A, for example, 84% agreed that they
feel overloaded with their e-mail messages at times, while nearly 65% at Company B felt the same.

**Similarities Between the Two Organizations**

There are a number of similarities among the managers of the two companies that are significant. Overwhelmingly, both organizations’ managers reported needing e-mail to complete their daily work assignments, and most argued that the majority of messages received were necessary for their job responsibilities. Very few managers received unsolicited e-mail at their offices, indicating that the messages received are a part of their work accomplishment. “It [e-mail] has given everyone more access to information,” argued Ed, a senior manager at Company B. “The use of e-mail has caused more people to receive copies of something that they probably would not have if they didn’t have e-mail.” From Company A came a similar attitude. “Everybody now has become dependent on [e-mail]. Losing e-mail would be like losing a leg,” said Mindy. “Fifteen years ago it was no big deal [if you didn’t use e-mail], but now it’s a necessity.”

Managers in both companies were insistent about the importance of e-mail, with nearly 90% in both organizations agreeing that sending and receiving e-mail was important to work accomplishment. Moreover, fewer than 10% in each organization admitted that they did not enjoy using e-mail, suggesting minimal resistance to information technology among the managers in this study. “It’s a tremendously valuable tool,” said Timothy, a senior manager in Company A. Jack at Company B agreed, “It is a
tremendous timesaving tool. . . . People recognize the importance of e-mail. . . . I guess 80% [of colleagues] are very, very happy with it and use it a lot and really depend on it.”

At both companies, managers were ambivalent about their need to reply to all e-mail messages. In Company A, 62.5% felt that they must reply to such messages, whereas 33.9% disagreed with that attitude, and 3.6% were undecided. Similarly, 53% at Company B felt that replying to e-mail messages was necessary, with 47.1% disagreeing. Additionally, managers at both organizations were in overwhelming agreement that communicating at work was made easier with the introduction of e-mail, with 78.5% at Company A and more than 82% at Company B agreeing or strongly agreeing with that position.

Demographically, the managers in the two companies were similar in at least one way, their managerial level within the organization. At Company A, 78.6% were senior or middle managers, while 88.3% at Company B were at those managerial levels. On the other hand, just 25% of respondents at Company A were senior managers, while 53.6% were middle managers. At Company B, 41.2% were senior managers. Beyond those similarities and differences, a number of other demographic factors reveal dissimilarities that may help explain some of the differences in the data between these two organizations.

Differences Between the Two Organizations

Not only are there more senior managers at Company B but also individuals have served as managers for longer periods. For example, over 41% of managers at Company
B have served as manager for more than 15 years, while only 14% at Company A have been managers that long. Combining the years of managerial experience, nearly 65% at Company B have been managers for over 11 years, while just under 29% at Company A have had the same years of managerial experience. That appears significant for this study, in the sense that they have learned techniques for handling large quantities of e-mail and have developed experience in scanning quickly their message inbox. Boyd, a senior manager at Company A, said that as a new manager he had felt the need to read thoroughly all e-mail he received. “Now I’ve become more comfortable, more confident.” He acknowledged that the added experience allows him to scan messages more quickly and delete them more ruthlessly. “I can scan the messages and automatically delete a lot of the messages.”

Another difference between the managers of the two organizations was gender. Whereas nearly 20% of respondents at Company A were women, the percentage at Company B was less than 6%, since only one woman is at the managerial level. To seek adequate representation, 33% of all managers interviewed at Company A were women, while the one woman at Company B constituted just 16.6% of interview subjects. That difference in gender representation at the two organizations challenged the researcher to find qualitative areas where men and women may handle e-mail differently or respond in different ways to information overload, especially at Company B.

The numbers of e-mail messages sent and received by managers at Company A were generally greater than the numbers sent and received by Company B managers. To illustrate, only 5.9% at Company B send more than 21 messages daily, while 34% at
Company A send that many. Even more striking are the numbers of messages received by these managers. More than 80% at Company A receive more than 21 messages each day, with 25% receiving more than 40 messages. At Company B only 23.5% claim to receive more than 21 messages each day, and none receives more than 40 messages. Those numbers were confirmed by the records review at Company B. The difference in numbers of messages sent and received between these two organizations might be explained by the smaller size of Company B. Because the managers at that site are less dispersed geographically, it is somewhat easier for them to meet personally to discuss issues without sending e-mail messages. At Company A, with 59 managers spread over a sprawling physical plant, e-mail may be, in fact, a timesaving, survival tool, as several of its managers suggested. Timothy at Company A summed up the greatest advantage that he saw in e-mail for that organization: “You can send information to more people quickly.” With a smaller number of managers at Company B, that advantage may be somewhat reduced.

The experience of information overload appears greater among managers at Company A than at Company B. At Company A, 75% agreed to feeling overwhelmed by the amount of e-mail they receive, while only 41.2% at Company B felt the same. To another survey question that phased the issue somewhat differently, 84% of managers at Company A agreed to feeling overloaded at times with their e-mail messages. At Company B that number was less than 65%, considerably less than at the other organization. Moreover, where slightly more than 14% at Company A did not feel overloaded with e-mail, over 35% at Company B responded that way. Finally, 50% of
the managers at Company A claimed to experience some stress from information overload because of the e-mail messages they receive, where only 17.6% at Company B claimed similar stress.

The differences in the experience of information overload among managers at the two organizations might be explained in two ways. First, managers at Company A are dealing with more e-mail messages than are the managers at Company B. The size of the organization and the geographic dispersion, even at the Central Virginia site, may require managers at Company A to use e-mail more than their counterparts at Company B. Since a majority of messages at both organizations are internal, it could be easier and more convenient for the 21 managers at Company B to meet and discuss issues and share information in person than for the 59 managers at Company A. George at Company B admitted that there was the potential for e-mail to detract from more personal face-to-face communication, but he acknowledged that that was not a problem among the managers in the organization at this time.

A second explanation is that these differences can be attributed to the length of managerial experience. Individuals at Company B have served longer at the managerial level than those individuals at Company A, and that experience may provide greater confidence in how to use this new technology most effectively. For example, 23.5% at Company B have been managers for 2 to 5 years, with none serving at the managerial level for less than 2 years. On the other hand, 53.6% at Company A have been managers for 5 years or less, with 14.3% having been managers for less than 2 years. That experience level appears significant and seems to confirm the findings of Ahituv et al.
(1998) that more experienced leaders use their prior experience to make better decisions. Moreover, those experienced managers demonstrate the ability to process information more quickly by focusing on the essential elements of communication and giving appropriate weight to the alternatives. Iselin's (1989) experimental research found similarly that information overload in managers was lessened with greater decision-making—or managerial—experience.

The results of this study indicate that experience could be an important determinant in an individual's experience of information overload, for those with less experience as managers do suffer more from overwhelming information overload and stress. That difference in experience level between the managers at Company A and Company B would explain the striking differences noted in their feelings of stress from information overload. The confidence of those who have been managers for longer periods helps significantly in handling e-mail and making decisions based on large numbers of messages. By contrast, those who have served as managers for shorter periods of time appear to have a more stressful response to large numbers of e-mail messages.

Findings about Research Questions

Each research question can be answered from both the quantitative and qualitative results and is examined individually. These research questions include the following:

1. What is the response of managers to information overload caused by excessive e-mail?
2. How does gender influence the presence or severity of information overload?

3. How might a manager’s resistance to information technology influence his or her experience of information overload?

4. What lessons regarding information overload can be learned from organizational managers?

Response of Managers to Information Overload

Analysis of the correlation between the presence of e-mail and the experience of information overload showed no statistical significance in the managers of either organization. When the data from the two organizations were combined, however, the findings of the Pearson correlation showed a small but statistically significant relationship ($r=.317; p=.006$). On the other hand, linear regression suggested that the relevance of that correlation was somewhat questionable, since it accounted for only 10% of the variability. Consequently, other measures may be helpful in suggesting managers’ response to information overload caused by excessive e-mail.

One of the more telling comments about the feelings of overload comes from Mindy, a middle manager in Company A who has served at the managerial level for 2 to 5 years. “I get a physical response sometimes, kind of a knot in the stomach. It’s tiring emotionally, but it’s only momentary.” She admitted to such a physical response when an unexpectedly large number of messages arrived, often after vacation or protracted periods away from the office. For example, the manager in this illustration claimed to receive an average of 100 messages each day, and her physical response was a reaction to
49 messages that had arrived during a period of several hours the day before her interview. In spite of that “knot in the stomach,” though, she was quick to add that the feeling was a “momentary flash when you see the inbox with 49 e-mails.” That momentary flash may explain why half the managers at Company A admitted to feeling stress from information overload because of the number of e-mail messages they receive.

On the other hand, managers at both organizations appear to have adapted to the large numbers of e-mail messages regularly received and sent. They seem to have developed an experienced approach to how best to handle those messages. The qualitative data suggest that managers have learned to read their messages quickly and determine what action may be most appropriate, whether to respond, forward to another department, delete, or take some other action. An example is Mike at Company B, who described how he recently handled nearly 250 messages that had accumulated in his inbox while he was away from the office. By sorting according to who sent the message, I probably eliminate about 50 right off the bat. By looking at the subject line, a lot of it was redundant . . . so I ended up whipping my way through that. So then in the course of a couple of hours I probably looked at a hundred of them [messages]. So I use a procedural-type approach towards it.

Lloyd, a senior manager at Company A, felt overwhelmed when he returned from vacation to find 140 messages in his inbox. He described a similar approach, saying that in spite of initial feelings of being overwhelmed, he read all the messages at once, deleting most as unnecessary to his work. After some reflection, he then admitted, “I don’t think I feel so overwhelmed.” The ability these individuals have developed, to
“read the first line or two and then delete,” as expressed by Timothy, is perhaps the reason more managers do not suffer negatively from information overload as the result of their e-mail messages.

Even Sue, the most junior manager interviewed, demonstrated an ability to handle large numbers of e-mail messages.

I leave e-mail up all day, and if it’s a simple request or response [received by e-mail], I’ll respond to that message right at that point. If it’s not that important, I’ll read it and delete it at that moment. If it’s something that I want to leave up, I just leave it in my in-basket or put it in my e-mail folder. Then I handle my mail throughout the day, when messages come in.

Acknowledging that some colleagues complain about the volume of e-mail, she went on to suggest that they are also “sometimes hungry for information.”

Many of the managers surveyed and interviewed hinted that e-mail could be and is misused on occasion, largely because of the ease of sending messages to many individuals at once. George at Company B said, “It’s so easy to send and receive a lot of material and go through and cc [carbon copy] people. I have not had that experience here at this location, but I had it at another location before I came here.” Another manager at that organization, Ed, agreed, “I fully realize the abuses that could happen at other places; I just don’t think at this point that they’re happening here.” In addition to the managers’ growing maturity in their use of e-mail, then, there may be a growing awareness of how e-mail should be used by others in these organizations, since most messages received were internal.
To the first research question, then, asking about managers' response to information overload as the result of excessive e-mail, there is evidence that managers have developed coping mechanisms to help them deal with those messages. Qualitative data strongly suggest that the burden of information overload may actually be lightened by e-mail. While survey responses from managers at both organizations do indicate feelings of being overwhelmed by the amount of information received at work by e-mail, the in-depth interviews expand those stated feelings considerably. Jack claimed:

People are overwhelmed by work. E-mail's just a tool that's being used, okay.

As far as being overwhelmed or stressed, I am, but it's because of the job and not the e-mail. E-mail's helping me keep up. It's not the e-mail that's doing it.

Everybody's trying to do more with less . . . and that's what causes the stress.

Again, if I didn't have e-mail, with the stuff I have going on, it would be much worse.

In general, then, while many of these managers admit to suffering from information overload, those feelings might be, rather than caused or even exacerbated by e-mail, helped by this timesaving tool.

Klapp (1986) expressed alarm that "a large amount and high rate of information act like noise when they reach overload: a rate too high for the receiver to process efficiently without distraction [or] stress" (pp. 98, 99). He asserted, correctly, that information technologies could generate massive quantities of information, but he failed to recognize ways that individuals could learn to use those technologies to help deal with that information to preclude overload. Much more accurate were the findings of Reuters.
(1998) that information technologies "are not the causes of information overload, but rather tools which can be used to combat the problem" (p. 23). These two disparate approaches are brought together in Kraut and Attewell's (1997) study that acknowledges the total volume of e-mail could be associated with information overload, but found instead that e-mail "did not increase their [respondents'] experience of being overloaded" (p. 337). This study confirms those findings.

How Does Gender Influence the Presence or Severity of Information Overload

The independent t-tests conducted to analyze the influence of gender on the presence and severity of information overload indicated no statistically significant differences between male and female subjects. At both organizations, men and women were fairly similar in their use of e-mail and their response to feelings of information overload. Those results are not as meaningful at Company B, since there is only one woman in the managerial ranks. However, the results in both organizations were consistent, revealing little difference between the responses of women in those two organizations.

In the in-depth interviews, though, there was some minimal difference between men and women in their attitudes towards e-mail use. A number of managers, men and women, expressed some concern about individuals who use e-mail in place of telephonic or face-to-face communication, when those other methods might be more appropriate. Timothy at Company A, for example, complained, "When somebody's sitting at the desk typing and you're at your desk typing, for God's sake, pick up the phone and talk to each
other.” Boyd, a senior manager at that same organization, said that one should always ask, “What’s the best method [for sending a message]? It’s not necessarily e-mail. In person maybe, or on the phone.”

While several men shared that attitude, every woman interviewed expressed concern about the potential for misuse with e-mail. Acknowledging many of the benefits of e-mail, Marge at Company A feared that “it does take away a lot of face-to-face.” She elaborated on her concerns:

Overall it’s bad, because you don’t establish the relationships, you don’t bounce ideas off other people as much as you have, and you don’t have informal conversations. It’s easier to jot off an e-mail, and we trade e-mails back and forth and it can get out of hand. Essentially there should have been a meeting or I should have walked down the hall to see the person and get their ideas. . . . The point I’m trying to make is that a lot of times I say to my team, “Go talk to that person to understand what they’re thinking.” E-mail is somewhat faster, but it stops us from having good relationships with other people that we work with on a regular basis.

Marge spoke of e-mail as a “helpful tool,” but her passion about the overuse or misuse of e-mail was evident.

Mindy, her colleague at Company A, spoke with only slightly less passion about the misuse of e-mail, but she did acknowledge that on several occasions she had to enter a dialogue between two or more members of her work team who were sending e-mail messages back and forth. “I’ve had to step in and say, ‘Stop sending e-mails. Get
together and do it [resolve the issue] verbally.” Citing e-mail as “a wonderful tool if used correctly,” she went on to repeat that “it can be abused. Like anything it can be used in a negative way.”

At Company B, Sue expressed a familiar degree of passion in her concern about the overuse of e-mail and its implications for interpersonal relationships on the job.

I’m kind of bothered by the fact that e-mail may be keeping people from talking to one another on the phone or face-to-face. A lot of times it’s sort of irritating because you could pick up the phone. Those are the things that I think are bad. Some people tend to want to use e-mail instead of talking to you. That puts them off in a corner, and people tend to want to overuse it [e-mail]. That’s bad for our communication skills. E-mail has taken the place of people talking to one another.

While Sue uses various databases to copy and paste information into e-mail messages, thereby demonstrating an advanced understanding of the technology, she is worried that “a lot of people use e-mail to avoid picking up the phone.”

These findings confirm some of the findings in earlier studies, while contradicting others. First, the women in this study appeared comfortable in their use of and attitudes towards information technology, even while expressing concern for its potential misuse. Mindy, for example, is “devoted to using e-mail,” and she uses it much more than the telephone or any other means of communication. Every one of the female managers at these organizations appeared to belie Winter and Huff’s (1996) findings of a confrontational information technology culture endured by women. The description in
their study of an electronic culture that is "unfriendly, unsupportive, and at times even hostile" to women was not at all evident in this study. On the other hand, their findings that men and women differ in their interaction style were confirmed. The women in this study expressed greater concern than did the men about e-mail’s potential harm to interpersonal contact. Several appeared passionate in their statements that people should get together to discuss issues more than simply dialogue online.

In addition, Harrison et al. (1997) and Weinman and Haag (1999) seem to overstate seriously the differences between men and women in their attitudes towards and use of information technology. The findings among men and women at the two companies studied show no indication that "females were more fearful of computer use, had less positive participation, and viewed computers as more controlling" (Harrison et al., p. 7). Moreover, that study’s finding that men may be more proficient than women in computing activities appears without merit. Weinman and Haag’s concerns over an "alarming technological divide" (p. 1) between men and women is equally without substance, according to the research conducted at the two organizations in this study. Similarly suspect appears to be Brosnan and Davidson’s (1994) research that found "females are generally more likely to possess higher levels of computer anxiety than males and to experience more negative attitudes towards computers" (p. 77). The women at Companies A and B were realistic in the limitations of e-mail as a computer-mediated means of communication, but they evidenced no significant anxiety or negative attitudes towards the technology.
The findings of this study confirm some recent research that "minimal gender differences [exist] with regard to future use of new technologies" (Scott & Rockwell, 1997, p. 55). Where some limitations existed in the research methodology of Scott and Rockwell, to include their heavy use of 1st and 2nd year undergraduates as opposed to working men and women, their work did confirm that men and women may not be suffering from a technological divide. This study into the role of e-mail on information overload clearly supports Gefen and Straub's (1997) work that men and women may differ in their perceptions of e-mail, but not in their use of that technology. Both were comfortable in their use of e-mail, although the women appeared more passionate about the dangers posed by e-mail in interfering with more personal means of communication.

**Resistance to Information Technology and Information Overload**

In their extensive study of e-mail, Hartman and Nantz (1996) found that user resistance was one drawback of e-mail, suggesting that that information technology was not universally accepted. Their findings appear at odds with a majority of the managers of the two companies in this study, where minimal resistance to e-mail was noted. Festervand and Meinert (1994) also cited findings regarding user resistance in their research, concluding that greater apprehension or resistance was present in females. Again, the findings at Company A and Company B did not support those conclusions.

To survey questions regarding enjoyment of the use of e-mail as part of the job, ease of communication with e-mail, and overall enjoyment of computer technology, respondents in both companies indicated very little resistance. For example, only one
respondent among all managers surveyed (N=73) admitted not enjoying computer technology.

On the Resistance Subscale, men and women in both organizations were almost identical in their response to e-mail. For men (n=61), the mean response was 2.5137 with a standard deviation of .5564. Among all women (n=12), the mean response was 2.3611 with a standard deviation of .4134. A t-test indicated there was no statistically significant effect of gender on resistance to information technology.

On the other hand, there is still a small resistance to e-mail on the part of a few managers. Slightly less than 10% at Company A do not enjoy using e-mail, an attitude expressed by nearly 6% at Company B. Moreover, there appears to be a direct relationship between resistance and an individual’s experience of information overload, as shown in the interview data. Ed at Company B, for example, admitted, “I’m still a hard copy guy. I print it out [e-mails received] in hard copy, what I think is important. Eventually I’ll probably switch somehow to folders.” He went on to say:

Not everyone enjoys [e-mail], because some people send things on e-mail that they should communicate by phone, and they think it’s not as personal. . . . It’s the older generation who are reluctant to use e-mail. They’re not as used to using computers.

It may be that Ed was addressing his personal resistance to computer technology, since the interview question was posed in a way to permit honest response to how “colleagues” felt about e-mail. His perceived resistance, as evidenced in the in-depth interview, may help explain his strong agreement in the survey that he feels overloaded with the number
of e-mail messages he receives and stress from information overload. Using the qualitative interview data with the quantitative survey data for this one individual, one might conjecture that a relationship does exist between resistance to information technology and information overload.

At that same company, Jack indicated a great amount of confidence in his use of information technology. He claimed that virtually all levels at the organization use e-mail heavily and recognize its importance to organizational success:

A big reason it's so important and has become such a popular tool is that it cuts down on small talk. It cuts down on the length of time it takes to negotiate a problem. . . . I guess 80% are very happy with it and use it a lot and really depend on it.

In sharp contrast to Ed, who indicated some resistance to information technology, Jack strongly disagreed in the survey that he felt any stress from e-mail-induced information overload or that he felt overwhelmed by the information received by e-mail. He also disagreed that he felt overloaded with the number of e-mail messages received.

Lastly, Simeon, a middle manager at Company A, expressed a high level of concern at the "constant and oppressive" presence of e-mail. Only recently promoted to middle management, he noted a significant increase in e-mail traffic from his previous position. While acknowledging the benefits of e-mail, Simeon did evidence some resistance to the technology, largely the result of having to maintain file folders and manage all the messages:
I feel stressed by e-mail; I wouldn’t necessarily say stressed out. As a manager I have a lot of responsibilities. It [e-mail] puts a lot of pressure on my day, because there’s easily two hours a day spent on e-mail. That’s not all that bad, because it’s real work getting done and it makes you more efficient, but I definitely feel the pressure of dealing with it and responding to it.

Simeon also appeared discouraged by colleagues who dialogue on e-mail:

That means it’s slower, because you ask a question and they have to respond, and so forth. It may take a couple of days to resolve the issue by e-mail, whereas in a phone conversation you might have been able to do it in 10 minutes.

An examination of his survey supports the information overload from which Simeon appears to suffer. He strongly agreed that he sometimes feels overwhelmed by the amount of information brought in by e-mail, that he feels overloaded with the number of messages he receives, and that he feels stress from that information overload. Brod’s (1984) early work into the human cost of computer technology claimed that anxiety was the primary symptom of those who are ambivalent or reluctant in the use of that technology. Simeon seems to confirm Brod’s diagnosis of technostress or technoanxiety.

These findings did not appear exclusively in the quantitative data, and some were only alluded to or suggested in the in-depth interviews. The conclusion that a manager’s resistance to information technology may influence his or her experience of information overload is the result of triangulating the quantitative and qualitative results in this research. If an individual resists using information technology or finds that technology unusually awkward, time-consuming, or inappropriate, that person may likely experience
greater symptoms of information overload than the individual who feels greater comfort with the technology. Managerial level in the organization and even experience with information technology do not seem to affect resistance, for the examples of people who are resistant to technology include managers at similar levels as those who do not show resistance. Moreover, interviews of managers who are resistant do not indicate any lack of experience with computer technology.

Lessons Regarding Information Overload

One of the research questions focused on what might be learned from organizational managers regarding e-mail and information overload. The lessons learned come from responses to both surveys and interviews. Since the records review at Company B confirmed the results of the surveys and the interviews, the researcher accepts the findings from those other two data collection sources concerning the numbers of e-mail messages received and sent at that organization. While it was not possible to confirm numbers at Company A, there is no reason to believe that the numbers of e-mail messages sent and received are different from those shown in the surveys and interviews. The lessons learned in this research may be divided into several categories: technology, technologically experienced management, usage guidelines, and training.

Technology

Evolving information technology is enabling organizational managers to better handle their e-mail communications and might be expected to improve into the future.
For example, according to the surveys, one reason that many managers enjoy e-mail is its ease of operation. “E-mail’s ease of use allows senders to communicate with an individual or a large group of people at once,” reported a middle manager from Company A who receives more than 40 messages each day. From Company B, one manager said of e-mail, “It’s so easy to use and so user friendly.” That ease comes in part from advancing technology that has simplified the process of sending and receiving e-mail (Angell & Heslop, 1994). A senior manager from Company B asserted, “With the advanced use of computer technology, we have learned to process more information in much shorter periods of time when compared to the years of ‘yesterday.’”

The interviews explored the use of e-mail in greater detail, and some of those interviews illuminated ways that e-mail and other information technology tools could actually reduce information overload and provide competitive advantage. Sue, a manager at Company B, admitted to having used e-mail for the first time in 1995. Now she sends important industry articles through e-mail to all organizational managers, using “push technology” (Bird, 1997):

Our managers realized that [before I started sending these articles] they were not getting competitive information disseminated. It’s hard for the managers to sit down and read through all the papers, and so having it on e-mail makes it easier for them. . . . I copy and paste all Lexus/Nexus articles onto e-mail. As we develop our intranet, I’m going to create industry news for each day and put the articles into a folder.
These comments demonstrate the evolution of information technology in general and e-mail in particular, for this manager is looking to the future use of a new technological development, the company intranet, to make more information available to everyone without adding to already burgeoning e-mail inboxes. Such optimism about technology advancements confirms the findings of Cole-Gomolski (1997) that “electronic mail is a godsend that has improved [managers’] productivity” (p. 1).

Ed, a senior manager, also at Company B, rehearsed the competitive advantage of e-mail. “[E-mail] has given everyone more access to information. The use of e-mail has caused more people to receive copies of something that they probably would not have if they didn’t have e-mail.” He commented that “e-mail is here to stay,” but he quickly added, “The IT folks are upgrading us to new software.” That new software indicates the evolving nature of information technology, a theme in many of the interviews.

“Technology seems to be growing in efficiency as it goes along,” said Timothy at Company A. He went on to discuss spell check, grammar check, and the connections to individuals’ calendars through Microsoft Outlook. “I love that!” he added. That application of the e-mail program has been adopted almost universally among the managers interviewed at that organization. All but one manager made special mention of Outlook, and each comment was extremely positive. The new technology allows anyone to see when others might be available, for example, for group meetings. Lloyd said, “That’s useful for getting a meeting with six people, and you can send out a meeting notice on e-mail. So I can get back messages on the five people that can make the
meeting. So that's very useful.” Mindy added, “There's no better way to schedule a meeting.” Simeon similarly praised Outlook's laborsaving functions.

These examples demonstrate how advancing technology is influencing the manager's ability to control information overload. More information can be processed in a shorter period of time, thus enhancing effectiveness without adding significantly to overload. In addition, numerous managers commented on the "tremendous tracking and documenting tool" that e-mail has become. Jack at Company B remembered:

In the old days over the telephone, you'd really have no tracking—who said what about what. With e-mail... I'll have 10 or 12 good-sized projects going on at any one time, and that's the only way I can keep up.

Others in Company A addressed that tracking and documenting tool as simply the ability to keep record copies of actions. That tool may provide insight into the lessons learned, that creating and filing paper copies of correspondence could contribute far more to information overload than might the use of e-mail technology. On the other hand, there is the need to understand how to use some of those e-mail functions, an issue that will be addressed under "training."

Finally, the ability of some e-mail applications to show the first line or two of an e-mail message without opening that message was cited as a great advantage. To survive the onslaught of 40 messages received daily ("In another month I'll be up to 80 again"), Timothy advised, "Read the first line or two and then delete. That's an advantage to Outlook, that you can read the first couple of lines without opening up the entire message.” That is another example of evolving technology that may aid managers in
processing and controlling increasing numbers of e-mail messages that could threaten to overload the individual. Mike at Company B recognized that “this is still evolving.” In his survey response about the role of e-mail on information overload he wrote, “We haven’t learned how to turn off other information sources and effectively use the e-mail tool. Time will tell. I see this as more of a social issue versus a company or policy issue.” Because this is an evolving social issue, it is important to explore through social science research how e-mail and other new information technologies may help individual managers protect themselves from information overload.

These two organizations represent in many ways a technology culture (Claver et al., 1998), one that is oriented toward continuous innovation in the use of technology. Because they are both focused on competitive advantage and shared responsibility, and because corporate management has demonstrated its commitment to the use of e-mail and other information technologies, these organizations may be expected to continue reaping the benefits of evolving technologies (Boiney, 1998; de Moor, 1997).

**Technologically Experienced Managers**

A second lesson that can be learned from organizational managers regarding information overload is that continuous learning and experience with technology helps ameliorate problems of information overload. The managers at both companies studied were largely mature in their understanding of e-mail and its benefits to them personally and to the company professionally. That explains in part how nearly 90% of all managers surveyed could agree that sending and receiving e-mail is important to their work
accomplishment and over 71% claimed to enjoy using e-mail as part of their job. These managers have in large measure learned to use e-mail effectively.

A number of earlier studies may have been unduly pessimistic about how managers can learn to master technology and use information, rather than be overloaded by it. Some research had suggested that business environments paid attention to technology but not to helping knowledge workers acquire the skills to effectively apply that technology (Park, 1998; Ponelis & Fairer-Wessels, 1998). While organizations might seriously consider the role of training in new technologies, managers in this study have developed the ability to handle and even master the influx of information from e-mail. Mann (1998) was accurate in his assessment, that “unless you learn how to evaluate and select what is important to you, you will be so swamped with information that you will soon find it impossible to store what you have learned” (p. 71). The managers at these two companies had learned through experience how to handle the information they received through e-mail.

The findings in this study confirm that technological wisdom can be learned (Kanner, 1998). Technological wisdom is a mature understanding of the limitations and advantages of unique technologies and the ability to use those technologies effectively. Moreover, the findings support Baldwin and Danielson’s (1998) conclusions that “today’s managers are quick to ask for information to be provided electronically” (p. 3). On the other hand, managers at all levels in this study bear little resemblance to Brod’s (1984) “executives [who] resist using computers because they simply don’t want to handle a keyboard” (p. 63). They were also unlike Scott and Rockwell’s (1997)
technophobics whose anxiety and apprehension of technology prevents them from gaining valuable computer experience. In fact, while their attitudes were not universally positive towards information technology, most managers in this study demonstrated a mature ability to handle large numbers of e-mail and seemed to control information overload.

For example, Mike followed what he termed "a procedural type approach" in sorting through and processing 246 e-mail messages. He had learned through experience to sort by author and quickly scan the subject of each message, gleaning necessary information quickly and deleting those that did not require action. E-mail for him is not so much a stressor as it is a necessary organizational tool. "We talk about e-mail as a tool, not as a problem... It becomes a part of all that you do." He went on to acknowledge, though, that "e-mail used with FAX machines and cell phones and things like that, it's made so much more available... I think it's the combination of things that causes some stress."

Those comments coincide with Kanner's (1998) findings about how "communications technology causes stress. When people use their beepers, car phones and faxes, they are subject to a powerful pressure emanating from the equipment to be more efficient" (p. 5). In fact, however, most of the managers at the organizations studied had become quite proficient at processing information received through e-mail and did demonstrate a substantial degree of technological wisdom.

Jack at Company B illustrates the technologically mature management that is seen in most of the individuals in this study. "E-mail's just a tool that's being used, okay. As
far as being overwhelmed or stressed, I am, but it’s because of the job and not the e-mail. E-mail’s helping me try to keep up. . . . If I didn’t have e-mail, with the stuff I have going on, it would be much worse.” He has learned to use e-mail in his daily work as a means of survival, and that demonstrates great technological maturity and experience.

That this maturity is being learned can be seen in the comments of two managers, both from Company A. Mindy admitted that when e-mail was first introduced, “most of us didn’t want it. The last thing I needed was something else to bug me.” She now describes herself as “devoted” to e-mail:

Now I think it helps me get twice as many tasks accomplished in the same time. Of course it brings in about twice as many, but it brings them in quicker so I can resolve them quicker. It’s good for quick communication and quick feedback.

Mindy, who spends one and a half to two hours per day on e-mail management, admitted to having moments when she feels overwhelmed by large numbers of e-mail messages, but she described how she handles an inbox filled with e-mail:

I do the first quick pass and scrub through them, and once I see that of the [original messages] only about eight or nine are things I really have to spend time on. Usually I can scan the subject and the first line, but sometimes I have to open them up. It also depends on who it’s from. If it’s from [my boss], I tend to read the body of it a little closer. By the end of an hour, it’s down to a short list.

Only within the past several years, then, she has learned how to use e-mail effectively rather than be suffocated by the messages it brings in to her. She called e-mail “the most valuable single tool I have as a manager.”
Boyd, a senior manager, offered insight into how managers can quickly mature in their understanding of e-mail technology and how they might learn to use that technology most effectively:

[E-mail] used to put me in stress from overload, but no more. First, I’ve grown accustomed to it. Two, I just delete a lot of the stuff. With Outlook you see the first three lines or so, and I scan it, and if it’s not interesting or important, I can just kill it. I’ve been in the job about two and a half years, and at first I felt that I had to read everything. Now I’ve become more comfortable, more confident.

Boyd made clear that he has “grown accustomed” to e-mail technology, that he has “become” more comfortable and confident. These findings confirm other research that supports the importance of experience with a technology in generating more positive attitudes towards that technology (Sachs & Bellisimo, 1994; Scott & Rockwell, 1997).

Unfortunately, however, not every manager surveyed or interviewed in these two companies has developed that level of experience with the technology. Some strongly denied enjoying the use of e-mail as part of their jobs, and at least one complained of the constant, oppressive nature of e-mail. A third lesson learned from the research involves the place of usage guidelines that organizations might adopt. Those guidelines may help managers in learning to navigate their e-mail messages.

**Usage Guidelines**

Managers at both organizations in this study agreed overwhelmingly that their companies needed a policy about how people should use e-mail. At Company A 62.5%
disagreed or strongly disagreed that a policy was not needed, while a smaller, though not insignificant number, 19.7%, felt that such a policy was unnecessary. Nearly 18% were undecided. At Company B, those claiming that a policy was necessary numbered 64.7%, with 23.6% arguing that such a policy was not necessary.

One middle manager summed up his feelings on the survey, saying, “The last thing our company needs is another policy!” Still, however, the majority did believe that some policy would benefit the organization. While Hartman and Nantz (1996) argue strongly for organizational policies that dictate the appropriate use of e-mail, they do acknowledge that such policies must create a balance between the organization’s rights and responsibilities and those of the individual. Finding that balance is often a challenge and may explain why only 18% to 25% of companies have written e-mail policies (Overly, 1999; Posch, 1996).

Overly (1999) argued that policies are important to reduce potential legal liability; protect confidential, proprietary information; and prevent waste of computer resources. Often such policies are necessary, he contended, because of the menace of spam. Not only is spam not a problem at the two organizations studied but also the policies Overly suggested are harsher than might be wise. He recommended that organizations install monitoring software “to prevent access to inappropriate content and to identify problem employees” (p. 87). Posch (1996), on the other hand, recommended a policy that includes the employee’s consent to being monitored and a statement about the organization’s purposes for monitoring. That, too, sounds a bit severe and may explain why a sizable minority in both organizations opposes e-mail usage policies. As Sproull
and Kiesler (1991) found, “Elaborate rules and restrictions can save managers from some embarrassments, but they discourage people from taking responsibility for their own behavior” (p. 165). This research with the two organizations confirms Hacker’s et al. (1998) findings that e-mail users prefer guidelines to more restrictive policies.

“Guidelines is a better word [than policies],” argued Marge at Company A. She added:

I think what you can do is let employees understand that a lot of people get bombarded with information and to use more sound judgment when you are responding to something and only put the names of the people there that need the information. I don’t know how you make a policy.

Simeon, also at Company A, took a similar approach in his comments: “Policy implies dictating. I think something better would be guidelines or recommendations or suggestions, some tips that might include stuff like the basics, like reading your mail daily or how to use Outlook.” Two senior managers at Company A likewise rejected establishing an e-mail policy, fearing that it might appear too harsh. “I’d call it a practice or a guideline,” said Boyd. “I think it would help, something that can be put in a very concise format.” Lloyd offered, “Policies wouldn’t be wise here. What’s proper mean? [E-mail] is a communications tool. [Policies are] just too restrictive.”

Managers at Company B were somewhat less concerned about establishing policies on e-mail usage. In fact, Mike asserted that a policy does exist:

We have a policy on the appropriate use of computers, for example, horseplay or going on the Internet for inappropriate purposes, things like that. I’ll say this: we
don’t condone the use of [business] computers for non-business purposes, so therefore, if someone is carrying on a chat over e-mail, that would be considered improper use or purposes.

Several others, including Ed, agreed with the need for a policy:

I think policies are always needed, and the policy should state that the e-mail should only be used for the purposes of the corporation or the company. . . . I think it should be mandated that a policy should be established. We do have one.

From Jack came this comment:

Policy is needed. You can’t run an e-mail [system] on this scale without a policy, because it’ll get abused. We discourage—actually, we prohibit—the use of e-mail for personal use or little notices going all over the place, because it junk[s] up the mail. . . . Now if they didn’t know we were watching them, there might be a problem. You’ve got to have a policy.

Doug, another middle manager at Company B, added, “We do have a company policy in regards to electronic communication, which e-mail would fall under, and that is to use it for company use only.” He did not favor anything more restrictive or prescriptive than that, suggesting that an exclusive e-mail policy was not necessary.

Finally, Sue appeared to favor some guidelines for e-mail usage, and yet she deliberately avoided the use of the word “policy.” She argued:

Yes, I think people are better off having rules set up for them, because you need structure, and with structure, that’s how you deal with them [users]. Without that structure, you probably end up doing more, because you don’t know where to
stop, and nothing’s off limits. So you need to be told what’s off limits. We have written procedures for everything else, so yes, I think you should have some procedures. There are procedures about using the computers for just company stuff, so people should know and take it a step further.

That hesitation to say the word “policy” suggests that there may be a pejorative connotation to such a word. The preference shown by many of the managers interviewed is that guidelines be established for appropriate use of e-mail. They believe that such guidelines should contain at least four admonitions: think before sending e-mail, keep messages succinct, place main ideas in the beginning of the message, and use “reply to all” carefully and deliberately.

**Think before sending e-mail.** Surveys of managers at both organizations were consistent in asserting that e-mail is a necessity in their work, and a majority at both Company A and Company B felt compelled to reply to e-mail messages sent to them. Moreover, a significant majority of respondents agreed that the ease of sending e-mail does contribute to excessive use of e-mail messages. They thought that it was prudent for organizations to admonish all employees to think before sending an e-mail message.

While the surveys were inconclusive about whether e-mail interferes with more personal, face-to-face communication, the in-depth interviews suggested a stronger feeling about that issue. Many managers cautioned that e-mail use could be detrimental to social interaction within the professional context. Sue at Company B said, “I don’t think [people] should use e-mail to get out of verbally communicating. I think that to me
is the biggest negative [of e-mail use].” George, a middle manager at that company, argued similarly:

The only thing that I guess I am concerned about is that it can become a barrier to interpersonal, face-to-face. There’s probably less face-to-face than is helpful.

One thing about e-mail that’s negative in that regard is it makes it less likely that you’re going to have consensus or collegial-type input into policy decisions.

Nearly 15 years ago, Naisbitt and Aburdene (1985) foresaw organizations in the information age that emphasized small, collegial teams as widespread alternatives to bureaucratic structures. A number of more recent studies reinforce the importance of technology, not in supplanting interpersonal contact but in reinforcing and facilitating that contact (Boiney, 1998; Pickett, 1998; Smith, 1997). In addition, one skill that is cited as essential to information age organizations is the ability to think, that is, “to synthesize and make generalizations, . . . to put facts in order to analyze a problem” (Naisbitt & Aburdene, p. 126). Most informants felt that managers need to think before sending e-mail messages.

Boyd, a senior manager at Company A, asked rhetorically, “Is e-mail the best way to communicate? . . . E-mail is just another form of communication, so think about what you’re communicating and who you’re communicating it to, and what’s the most appropriate way to communicate it.” He continued to suggest that e-mail does not communicate emotions very well, and so he urged that individuals consider seriously the best way to transmit information. A similar suggestion was offered by Lloyd, who added, “When I’m talking to you [in person] or talking on the phone, I’m not going to
call you names or yell at you... But it’s easy to send flamegrams on e-mail.” That comment emphasizes the importance of thinking before sending an e-mail message. Is e-mail the best way to communicate with the other person? Is the message different from what it would be if I were to speak with that individual in person or on the telephone?

Keep messages succinct. Numerous complaints were registered in the interviews that e-mail messages were often too long, that they rambled and were simply not written well. In spite of basic communications principles (Guffey, 1997; Murphy et al., 1997), too many e-mail messages fail to express the main point concisely. “[Writers] could express their thoughts more succinctly. A lot of people will take 10 sentences to convey what two sentences would have done,” argued Timothy, a senior manager at Company A. Marge agreed that “one of the problems we have is messages that are three and four pages long.” “Keep messages short,” added Boyd. “Don’t send 27-page documents like spreadsheets or presentations on e-mail.”

Those same attitudes about the need for concise writing were discovered at Company B, where Mike complained, “Heavy attachments that use graphics or pictures still take a lot of time.” The implication is that e-mail messages should be used for relatively short communications, perhaps announcing that longer documents will be forwarded through some other means. This is one area where technology may advance in the future to allow longer attachments that will not slow the process of receiving documents, but with current technology, such attachments occasionally tax both the individual and the e-mail system. Nevertheless, that technology is improving steadily.
and rapidly. "It used to be that attachments were tough to open and it would take a while, but they open up pretty quickly now," said Doug. Still, he commented that "I prefer a brief e-mail message rather than a long attachment that I have to read all the way through." Those comments are echoed by Jack, who claimed that he writes messages that "go anywhere from two sentences to half a page or a page, never any longer. . . . I can put a two-liner [e-mail message] in here, and you can never do that in a telephone conversation." To prevent the possibility of information overload, the managers studied felt that messages should be kept short and that such a lesson might be added to usage guidelines.

**Place main ideas in the beginning of the message.** Yet another guideline managers suggested for writers of e-mail messages is that they put main ideas in the first part of their message. Such a direct style of writing permits message recipients to recognize immediately the message content and whether it is for information or action. Mike said, while being interviewed:

I think we need to emphasize our principles of how to communicate. . . . I guess one thing I’d say is that we need to put our main ideas up front, in the subject line or in the first line or two. That would help a lot, letting me know what it’s about. Since so many managers admit to scanning their e-mail messages and reading only the first lines before deciding to keep, delete, or act on those messages, it becomes essential that individuals state directly the purpose and major point of the message. Such writing
follows the direct sequence that begins with major, specific points and leads to lesser, general ones (Guffey, 1997; Lahiff & Penrose, 1997).

At Company A, Marge urged writers to “put the main idea right up front. Place the disclaimer in the first line or two to show if it affects me or not.” Timothy was more philosophical: “People would write better if they wrote while thinking of the receiver.” Since so many receivers of e-mail messages receive large numbers of such messages, placing main ideas in the subject and first lines of the message would be helpful, perhaps even critical, in preventing information overload.

**Use “Reply to All” carefully and deliberately.** A final admonition managers felt should be incorporated in any e-mail usage guidelines is that users be both careful and deliberate in their use of the “Reply to All” function. In other words, when a message is sent to several individuals, each recipient may choose to respond directly to the sender or to all the recipients of that message. To respond to all recipients, the individual simply selects the “Reply to All” e-mail function. The simplicity of that function, however, has added to the proliferation of messages and the possibility of information overload.

One of the advantages of e-mail cited in numerous works is its multiple-receiver addressability, that is, e-mail’s ability to be sent to groups of receivers simultaneously (Hacker et al., 1998; Hartman & Nantz, 1996; Sproull & Kiesler, 1991/1995). Along with that advantage, however, lies a potential danger that needs to be both recognized and addressed through usage guidelines. When receiving such multiple-addressee messages, some recipients reply to everyone who received the original message instead of just the
sender. In their survey responses, several managers in Company A commented on this challenge to information overload. "Some receivers like to reply to everyone on the address list, whether they need it or not," wrote one middle manager. Analyzing that challenge, another middle manager added, "Part of the problem here is the use of 'group' mailing instead of just listing individuals that are necessary." Finally, a third middle manager at that organization shared the following:

When you have 10 people reply to a message and all of them copy all that received the original message, it's absurd. We should be able to use better judgment as to who needs the info before we "reply to all"!

This guideline, then, would help e-mail users understand their role in reducing the risk of information overload and unnecessary proliferation of e-mail. "Reply to All" should be used carefully and deliberately.

During in-depth interviews at Company A, several managers mentioned this same issue. Timothy spoke of his colleagues' frequent complaints "about others' misusing 'reply to all.'" Marge suggested providing guidelines for e-mail use:

I think what you can do is let employees understand that a lot of people get bombarded with information and to use more sound judgment when you are responding to something and only put the names of people there that need the information. . . . Use judgment when replying; don't "reply to all."

Boyd, who claimed to receive an average of 45 to 55 e-mail messages daily, repeated those words almost verbatim. One recommendation he offered to make e-mail more effective at that organization: "Don't always 'reply to all.'"
Trainning

The research indicates that many managers in Companies A and B have become technologically experienced, often while learning on the job. At the same time, however, there are hints that not all managers have learned to use the available technology, and that may be the reason for some latent resistance on the part of some individuals. For example, Ed, a senior manager at Company B, admitted, “Eventually, I’ll probably somehow [emphasis added] switch to folders.” Implicit in that statement is the fact that he may be uncertain about the procedure for accomplishing that relatively easy task. As Sue at that organization stated, “One person I know had something like 500 documents on his computer. . . . I got him to put things in folders, and now he can find things. I was like that once.” These examples highlight the importance of training that may assist managers and other employees in proper use of e-mail technology.

Minimal training in e-mail procedures could help in the areas of both first-level efficiency effects and second-level social effects (Sproull & Kiesler, 1991/1995). First-level effects include the e-mail technology that permits, for example, creating message folders. Second-level effects, on the other hand, include training people in the workforce about how such folders can be created and used. Several studies point out the importance of organizing work into folders (Rose & Strom, 1998; Whittaker & Sidner, 1997), and yet more than a few managers interviewed seem to lack that skill or know others who lack it.

Sue was asked about her recommendations to make e-mail more effective at that organization. Her response was illuminating: “[Employees] should be taught structure,
taught how to set up files or folders for tracking [correspondence]. You may even want to identify major folders or an archive.” Jack agreed:

One thing we could use is more training on how to use some of the features in [Microsoft Outlook]. There’s a lot more that users can get out of this tool than they ever have. People need some training in the use of e-mail.

The need for such training was seen clearly at Company A as well. Lloyd spoke of a colleague who “is always having 100 or 150 [e-mail] messages in his inbox. He goes and cherry picks which ones he’s going to read first.” That type of “cherry picking” manager could benefit from some organizational training that might introduce ways of organizing those messages into work folders. Not only might the individual become more productive but also he or she may feel more invested in the organization, since it has invested in the manager’s professional growth.

Still another senior manager at Company A acknowledged in the survey that “I am not aware of specific e-mail sensitivity training as such.” A junior manager who saw the relationship between the lack of training and information overload also recognized and commented on that need. “I would agree that e-mail may contribute to the experience [of information overload]. It is not so much caused by the influx of e-mail . . . but rather by our lack of training in how to ‘handle’ e-mail.” The need for some training at Company A may be most evident in the survey comment of a middle manager who confessed, “I have 339 unread messages in my Outlook inbox. I could use any advice on how to manage this.” Organizational training in techniques and available tools might help these individuals.
In addition to helping managers handle and organize their e-mail, training might assist in reducing computer anxiety, an infrequent but real force at these organizations. Stress and anxiety from large numbers of e-mail messages or from using information technology were present in a significant percentage of managers surveyed. Training might also alleviate some of that stress. A middle manager with over 15 years’ experience claimed on his survey, “Like other communications tools, e-mail messages can be overdone, but how you manage the tool in large part determines stress and frustration.” The suggestion is that training might reduce some of that frustration. While 17.6% of managers at Company B acknowledged feeling stress from information overload, 50% of respondents at Company A felt the same. The research seems to support Maurer and Simonson’s (1994) findings that instruction or training can be effective in reducing computer anxiety.

Caswell (1988) recognized over a decade ago the dangers inherent in introducing new information technologies. The effectiveness of e-mail, he posited, was dependent on people’s willingness to use the system. Today, people in the workplace use the system, but they may not be using it as effectively as they could. Training could help them become more adept at e-mail task management and more considerate of receivers’ needs. Almost every manager in both organizations suggested ways to make e-mail more effective. Many of those suggestions followed the admonition to adhere to better electronic etiquette (Bardsley & Shultz, 1996; Bird, 1997). Timothy, for example, said:

We have all noticed that some people will say things in an e-mail that they wouldn’t say face-to-face or even say on the phone, something between assertive
and a flame-a-gram. People complain about the incoming e-mail, the volume and the quality of other people’s e-mail.

Simeon offered a recommendation regarding how people might be trained in the use of the subject line. “What I’d like to be able to do is have a way that marks a message as Action or Information, something that marks ‘This is an Action message’ in the subject line or something.” Boyd at Company A urged that employees be instructed to “think in terms of the receiver.” He offered several tips that might be incorporated into an organizational training session. “Use e-mail with other technology. . . . Don’t always reply to all. Think about what message you’re delivering, to whom, and how you want it received, and then ask yourself what’s the best method.” These guidelines could be reinforced in an organizational training workshop that would aid members in using e-mail more effectively.

Managers at Company B felt similarly about the need for training in better e-mail etiquette. Even a training session on the needs of message recipients and what information is most necessary could be extremely helpful. According to George, “Sometimes you get a lot of e-mail information, but it’s not always the stuff you want to know about. It’s a little like dying of thirst in the middle of the ocean.” An hour’s training could save potentially large amounts of time by suggesting the types of information that managers actually require for their work accomplishment.
Recommendations for Future Research

This cross-sectional research studied managers at two major, international organizations that are engaged in technologically sophisticated work. Company A is a leading provider in the telecommunications industry, providing leadership in high-tech communications and the design and marketing of two-way mobile communications products. Company B is intimately involved with environmental programs involving the nuclear industry, specifically nuclear decontamination and decommissioning, waste management, and environmental restoration. Future research might be conducted to explore the role of e-mail on information overload in general managers who may work in less high-tech fields.

Moreover, a rich longitudinal research opportunity exists in studying managers who undergo training in the proper use of e-mail. Are they less stressed or anxious in using e-mail as the result of a training program? Surveys and in-depth interviews could explore that issue both before and after the intervention.

A third recommendation for future research might consider the long-term effects of facing large quantities of e-mail messages. In a longitudinal study, one might seek to discover if information overload grows over time and wears down individuals who have learned to handle large numbers of messages on a daily basis. Is there a point at which managers make unwise or imprudent decisions because of the cumulative effects of information overload?
Finally, hints of a potentially serious societal issue may be present in the current research study. Managers who find it necessary to take computers along on vacation “just to keep up with all the messages” may be forecasting a need for more relaxation than the technology is allowing them. These hints may call for a study into the role of e-mail on what Schor (1992) called “the unexpected decline of leisure” (p. 2). What happens when managers on vacation take their office work with them consistently? Is there a point at which work on vacation becomes overwork and perhaps overload?

Conclusion

The role of e-mail on information overload has been little understood. From studies that touted uncritically the many benefits of e-mail (Angell & Heslop, 1994) to others that warned of “the dark side to the [e-mail] technology” (Verespej, 1995a, p. 48), a consensus has been lacking in how e-mail may influence an individual’s experience of information overload. While Buckholtz (1995) recognized the link between people, information, and technology, he did not see all the intricacies that link involved. Although Bentley (1998) realized that “as with any technology, the answer lies in the successful application of the new capabilities” (p. 83), he had no empirical data to illuminate what constitutes successful application of e-mail technology.

Rudy (1996) recognized that most work in the area of e-mail communication has been in laboratory-like experiments. Consequently, he recommended research be conducted to see the influence of e-mail on information overload in individuals. This study has done just that.
E-mail does not necessarily cause information overload, although it does play a role in the overload suffered by many managers. While managers are using increasingly user-friendly technology and becoming technologically experienced, they may benefit from usage guidelines and from organizational training. Many managers still lack the skills for most effectively employing e-mail technology, and such a lack could create greater stress, anxiety, and frustration from overload.

The case study design of this study enriched the findings, for the survey alone was inconclusive. The objective analysis of e-mail messages sent and received at Company B confirmed the self-reports of most managers about the level of message load they regularly handle, and in-depth interviews at the two organizations discovered both strategies that managers employ to handle their e-mail and potential areas of risk.

Lastly, e-mail at these two organizations does play a significant role in information overload, but it is more benign than might have been expected. E-mail is a powerful communications tool that many managers use to help them survive the pressures of daily work. If some managers are dying of thirst in the middle of the ocean, others are finding that e-mail may actually help them navigate the deluge and be in fact refreshed in the process.

E-mail is a powerful communications tool that can be expected to grow in popularity and use in the coming decades. This research provides a starting point for future studies into not only the technology but also the effects of that technology on the individuals who must use it for their daily work.
REFERENCES


APPENDIX A

Letters to Organizational Executives with Research Proposal

April 9, 1999

[General Manager]

Dear:

As a Ph.D. candidate at Walden University, I am beginning to conduct research for my doctoral dissertation. The topic is the role of e-mail on information overload in organizational managers. To assist me with that research, I would greatly appreciate the opportunity to conduct a survey and interviews with selected managers at [Company] at some point in the next few months.

I would appreciate the opportunity to speak with you for about 15 minutes in the next week to outline my proposal and seek your approval to conduct these surveys and interviews. My goal is to be as non-intrusive as possible during this research and to complete my work as quickly as possible. Additionally, I will be happy to share with [Company] the results of my research as soon as it is completed.

Attached is a brief statement of my research proposal, which will describe the purpose of my study and its methods. I will call your office next week to arrange a meeting with you at your convenience. If you need to contact me before that time I am available at 385-0290 (Home) or 582-2341 (Office).

Thank you for your consideration, and I look forward to speaking with you next week.

Sincerely,

Bruce K. Bell
Ph.D. Candidate
Walden University

Attached: Research Proposal
Proposal

Research for Dissertation

Bruce K. Bell, Ph.D. Candidate, Walden University

Introduction: This research is in partial fulfillment of the requirement for the Ph.D. Degree for Bruce K. Bell, a student at Walden University. The data for this research will come from both surveys and interviews with organizational managers at [Company] in Lynchburg, Virginia.

Background, Problem, Purpose: E-mail has become a major means of communication within the organizational setting, and the ease of sending, replying to, and forwarding e-mail messages may lead to information overload, especially among managers. These members of organizations must increasingly respond to e-mail messages from senior executives, colleagues, and subordinates, plus clients and customers.

Research may provide understanding about how managers can handle the problem of information overload, and yet no one has explored adequately what answers there might be.

The purpose of this research study is to explore the role of e-mail on information overload in organizational managers. This study will be conducted using both surveys and interviews. The results of the study will be shared with [Company] as the findings and conclusions are completed.

Proposal, Plan, Schedule: As a professional manager and educator, the researcher is aware of the importance of being non-intrusive in the professional setting. Consequently, he is committed to conducting this study with minimal interference with work being performed by research subjects. On the other hand, to explore adequately the phenomenon of information overload in managers, a brief survey will be conducted among a sample of managers. Following that survey, interviews will be conducted with selected managers. The results of individual surveys and interviews will be kept strictly confidential.

The proposed plan is to conduct the research during the summer of 1999. The surveys, designed and reproduced by the researcher will be sent out to the participants not later than June 1. To enhance participation, a cover letter signed by the organizational executive will be sought. The
researcher will send a follow-up reminder after two weeks to those participants who fail to respond to the survey. A second follow-up will be sent, if necessary, two weeks after that. Any managers who do not respond by then will be considered non-respondents.

The researcher will conduct interviews at [Company]. For purposes of accuracy, the researcher will seek to record each interview, and the purpose of that interview will be described to each interviewee. [Company] may assist in providing an area where the interviews may be conducted privately.

**Staffing:** All research and analysis will be conducted by Bruce K. Bell, a Ph.D. candidate with Walden University, Minneapolis, Minnesota. An associate professor of Business Communications at Liberty University in Lynchburg, Virginia, he is a retired lieutenant colonel from the United States Army.

**Budget and Authorization:** The researcher assumes responsibility for all costs associated with this study, to include his time, stationery, recording device, and research analysis. [Company] will be asked to provide confidential access to names of managers who might be selected to participate in the study. In addition, [Company] will be requested to provide a location for the researcher to conduct private interviews with managers.

The researcher will provide a complete summary of his findings to [Company] as the dissertation findings and conclusions are completed.

[Company] will benefit from this research in discovering ways that managers may better handle the overload of information that is created by e-mail messages.

The signatures below signify authorization of this research proposal.

Bruce K. Bell [General Manager]

Date Date
[date]

Dear Manager:

We are cooperating with a research project being conducted by Bruce K. Bell, a Ph.D. candidate from Walden University in Minneapolis, Minnesota. The purpose of the study is to discover the role of e-mail on information overload in managers.

[The company] will benefit from this research as Mr. Bell discovers ways for managers to better handle the vast quantities of e-mail that we send and receive daily. He has promised to share this information exclusively with us, and we look forward to his findings and recommendations.

You have been selected to complete the attached survey, which may be returned in the enclosed envelope. The survey should take no more than about 10 minutes to complete. Mr. Bell has assured us of complete confidentiality, so you may be entirely honest in your responses. In his dissertation, he will not identify any individual, and all research records will be kept in a secure file in his office. In addition, Mr. Bell has asked that a small number of you be interviewed for this research study. We appreciate your willingness to help when you are contacted. Those interviews will last approximately 30-45 minutes.

Working with Mr. Bell in this project is Dr. Gary Gemmill of Walden University (315-437-1727; ggemmill@waldenu.edu). If you have questions regarding this important study, you may contact Mr. Bell at 385-0290; bbell@waldenu.edu.

Please return the survey not later than June xx, 1999. Thanks for helping with this project. We look forward to the results of this study, and we'll pass those on to you as soon as we receive them.

Sincerely,

[Senior Executive]
Survey on e-mail and information overload

Instruction: Please read each of the following statements carefully and circle the answer that most nearly corresponds to your feelings.

A=Strongly agree    B=Agree    C=Undecided    D=Disagree    E=Strongly disagree

1. My daily work requires me to use e-mail.    A B C D E
2. The majority of e-mail messages I receive at work are not necessary for my job responsibilities.    A B C D E
3. Sending and receiving e-mail is important to my work accomplishment.    A B C D E
4. I do not enjoy using e-mail as part of my job.    A B C D E
5. I regularly receive unsolicited e-mail messages at work.    A B C D E
6. Sometimes I feel overwhelmed by the amount of information received at work by e-mail.    A B C D E
7. I feel that I must reply to e-mail messages sent to me.    A B C D E
8. There are times when I feel overloaded with the number of e-mail messages I receive.    A B C D E
9. Our company does not need a policy about how people should use e-mail.    A B C D E
10. Communicating at work was easier before we began using e-mail.    A B C D E
11. I enjoy using computer technology.    A B C D E
12. I feel that e-mail interferes with more personal, face-to-face communication.    A B C D E
13. I prefer obtaining information through e-mail rather than personal contact.    A B C D E
14. The ease of sending e-mail contributes to excessive use of e-mail messages.    A B C D E
15. I feel stress from information overload because of the number of e-mail messages I receive.    A B C D E
**Instructions:** Please circle the following to the best of your ability:

16. My level in the company would be described as
   - Senior manager
   - Middle manager
   - Junior manager
   - Other

17. I have been a manager for
   - Less than 2 years
   - 2-5 years
   - 6-10 years
   - 11-15 years
   - more than 15 years

18. Gender: M F

19. The average number of e-mail messages I send daily is
   - Fewer than 10
   - 11-20
   - 21-30
   - 31-40
   - more than 40

20. The average number of e-mail messages I receive daily is
   - Fewer than 10
   - 11-20
   - 21-30
   - 31-40
   - more than 40

Do you believe that e-mail may contribute to the experience of information overload in some of your colleagues? Why or why not?

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Thank you for your assistance in this survey. Your help is extremely important, and I appreciate your time and willingness to participate.
APPENDIX C

Interview Issues

E-mail and Information Overload Interview

Name:

Gender: M  F

Managerial level: Top  Middle  Junior

1 – What is your experience with e-mail here in the office?

2 – How much e-mail do you send and receive each day? Do you ever feel that you are overwhelmed by all that e-mail?

3 – Could you categorize the types of e-mail you typically receive, e.g., internal e-mail, e-mail from customers, listservs, spam?

4 – How do you handle all the e-mail that comes into you?

5 – Do you set any filters (human or technological) on the e-mail that you receive?

6 – How do you think policies on the use of e-mail would be received by workers here?

7 – Do most of your colleagues appreciate having and using e-mail?

8 – If you could recommend one way to make e-mail use more effective in this organization, what would that be?

9 – Do you have anything more you’d like to add on this subject?
APPENDIX D

Company A Interviews

*Timothy—Senior Manager

* All names used are pseudonyms

1 - What is your experience with e-mail here in the office?

It's a wide open pipe that anybody can pose a question to anyone. There are few rules, but the rules that are created are self-imposed. All you have to do is use it once and people react to it. . . . There's been some self-regulating as people pay for their e-mail sins. There's also some peer pressure that comes from "copy all." Anything that someone puts on e-mail has to pass the "Wall Street Journal test." If you don't want to see it on the front page of the Wall Street Journal, don't put it into an e-mail. And people just understand that.

Time and space (on the computer) is the issue. Humans are the bottleneck. I can send it a lot faster than I can read it. You can't read it all; that's the major complaint I hear. People are deleting messages without opening it; they just read the first line or two. External messages that are not from paying customers I often just delete w/o opening it.

All in all it's a tremendously valuable tool. My fear is that if we don't do a little more self-regulation about what's appropriate and what's not appropriate, we'll be just flat overwhelmed.

2 - How much e-mail do you send and receive each day? Do you ever feel overwhelmed with all that e-mail?

There are messages that just inform and others that require action. There were times when I'd get 80 a day. Right now I get about 40, and that's not bad at all. In another month we'll be up to 80 again. If a message requires some action, it takes a little longer. Some of the longer messages I print out and take home with me.

You can't give equal time to all messages. Some messages will have negative job consequences if you don't respond.

3 - Could you categorize the types of e-mail you typically receive?

In my role there's a lot of internal messages. Some of that is just to inform, and others require some action. About unsolicited e-mail, I only get a couple a day here, and they're
generally headhunters or recruiting firms, and I normally just forward that to the staffing department.

4 – How do you handle all the e-mail that comes into you?

I read the first line or two and then delete. That’s an advantage to Outlook, that you can read the first couple of lines without opening up the entire message.

5 – Do you set any filters (human or technological) on the e-mail you receive?

I’ve never used one to my knowledge. There’s probably some firewalls that IT puts up to keep some things out.

6 – How do you think policies would be received by workers here?

We have policies on how people should communicate, and that’s an umbrella that includes e-mail as a way to communicate. Really the core values of [the company] are Professionalism, Respect, and Perseverance. They’re very broad, but they cover written communication, and e-mail is just a change in form. I don’t know how you make a rule about things like junk e-mail, since “junk” is in the eyes of the beholder.

7 – Do most of your colleagues appreciate having and using e-mail?

People enjoy using it and they enjoy complaining about it. You can get caught up responding to e-mail all day, and having real-time typing conversations. We try to discourage those. When somebody’s sitting at the desk typing and you’re sitting at your desk typing, for God’s sake, pick up the phone and talk to each other.

International messages lead to our first work with e-mail in the morning, working on messages that came in while we were sleeping.

You can send information to more people quickly. We have all noticed that some people will say things in an e-mail that they wouldn’t say face to face or even say on the phone, something between assertive and a flame-a-gram. People complain about the incoming e-mail, the volume and the quality of other people’s e-mail. People complain about others’ misusing “reply to all.”

8 – If you could recommend one way to make e-mail more effective in this organization, what would that be?

To make e-mail more effective, it would have something to do with improving people’s writing skills. They could express their thoughts more succinctly. A lot of people will
take 10 sentences to convey what two sentences would have done if they had a command of the language.

Technology seems to be growing in efficiency as it goes along—like spelling and grammar check, the connections to the calendar (I love that!)

9 – Do you have anything more you’d like to add on this subject?

The meaning of communication is created by the receiver, that is, the response it gets. People would write better if they wrote while thinking of the receiver. It has more to do with the basics of communication more than with the technology. Overload from e-mail is not the problem if I don’t have people coming to see me. It’s the competing demands that’s tough. It’s important as a society we need to do a better job of getting our arms around information.
Marge—Middle Manager

1 – What is your experience with e-mail here in the office?

I probably get 20-30 e-mail a day, so it is manageable. It permits fast responses, but it does take away a lot of face-to-face. Overall it’s bad, because you don’t establish the relationships, you don’t bounce ideas off other people as much as you have, and you don’t have informal conversations. It’s easier to jot off an e-mail and we trade e-mails back and forth and it can get out of hand. Essentially there should have been a meeting or I should have walked down the hall to see the person and get their ideas. So sometimes it’s not used appropriately.

I think in most cases, people in my team know what I expect. The point I’m trying to make is that a lot of times I say to my team, “Go talk to that person to understand what they’re thinking.” E-mail is somewhat faster, but it stops us from having good relationships with other people that we work with on a regular basis.

2 – How much e-mail do you send and receive each day? Do you ever feel overwhelmed with all that e-mail?

I receive between 20 to 30 a day, and I send perhaps 15-20 each day. I spend probably a couple of hours a day on e-mail. There might be more than I think there is. I suppose my boss gets over 100 a day. I know he’s overwhelmed with e-mail.

3 – Could you categorize the types of e-mail you typically receive?

All my message are internal; I can’t think of any that come from external sources. They [the company] must stop [unsolicited e-mail]; I don’t get that at all.

4 – How do you handle all the e-mail that comes into you?

I just work on the e-mail as they come in. I do it all throughout the day.

5 – Do you set any filters (human or technological) on the e-mail you receive?

No, I do it all myself.

6 – How do you think policies would be received by workers here?

Guidelines is a better word. I think what you can do is let employees understand that a lot of people get bombarded with information and to use more sound judgment when you are responding to something and only put the names of people there that need the information only. I don’t know how you make a policy.
A lot of the folks who are getting a lot of e-mail and need help managing it could use assistants who have the ability to take the message and forward it so that the person [executive] never sees it. One of the problems we do have is messages that are 3 and 4 pages long. We could put in a policy that if you have a long document, put it in an attachment and state what is it that the reader needs right up front. Then I could print it out and review it on my own time. That could help in the way of efficiency. Also, stay away from graphics and things that take up a lot of space.

Outlook is a huge time-saver, especially the calendar function, so that’s something we could put into a policy that we are going to use Outlook to keep our calendars on so that we can have more efficient scheduling of meetings.

7 – Do most of your colleagues appreciate having and using e-mail?

Absolutely. Everybody now sees it as a helpful tool.

8 – If you could recommend one way to make e-mail more effective in this organization, what would that be?

Be concise. State whatever it is you need from me right up front. Use judgment when replying; don’t “reply to all.”

9 – Do you have anything more you’d like to add on this subject?

E-mail is really not a problem for me [regarding information overload]. It’s manageable; it’s information I need. What I tend to do is print out an attachment and take it home with me and look at it that night.

In terms of efficiency, if I’m going to send an e-mail to a person, it’s quicker for me to pick up the phone and call that person and tell them what I need to tell them, as opposed to the time it takes to craft this message. I’m a little concerned that we think we’re saving time by using e-mail, but in essence, by the time we craft the message, it’s taken us twice the time as it would to have done it the other way. Now obviously, if you’re sending the message to 20 people, it’s easier to send one message; it’s more efficient.

Don’t put me on the “cc” line if I’m required to do some action, and don’t put me on the “To” line if it’s for information only. Put the main idea right up front—place the disclaimer in the first line or two to show if it affects me or not.
Simeon—Middle Manager

1 – What is your experience with e-mail here in the office?

I came here as a project manager and was promoted to manager of project managers, and there was a huge increase in the amount of e-mail I received. That makes sense, because you’re getting mail from all the people who work for you, plus management issues laterally across the business. And then you’re given a lot more information.

High level people in the military always had people screening messages, so our vice presidents probably need someone to help them screen all the messages they receive.

2 – How much e-mail do you send and receive each day? Do you ever feel overwhelmed with all that e-mail?

I don’t receive that many, probably 30 to 40, closer to 40, but about half of those I need to take action or give it some thought or do something with the message. It’s probably best to delegate some of those actions, push them down. We all know that principle. Still, there’s a lot to deal with.

The Information Age allows us to become so efficient at getting out tasks, that we quickly load people up. That can be good or bad. As a business, we can accomplish more, but it comes at a price when people work more intensely or work longer or work harder. I spend about a third of my day handling e-mail—at least two hours each day.

I handle my e-mail first thing in the morning, and a couple of hours later I’ll work on it some more. Then towards the end of the day, around 6 or 7 o’clock, when people are trying to get things done, you’ll get a slug of them again.

E-mail is so constant and oppressive, that some people take their laptops with them on vacation. I did this last week and I would every other day download my e-mail after everyone went to bed. I’d spend an hour or two getting through those e-mails to flag the ones that required some action. It was not like I did a lot of business while on vacation, but just keeping up with it.

I probably send an average of 25 a day.

3 – Could you categorize the types of e-mail you typically receive?

Probably 80% is internal and about 20% external, from customers. I receive very little unsolicited mail. Some people can’t resist sending a joke that they receive, but we put out a policy that that kind of stuff is not right. It takes up time and memory, both of
which cost money, plus sometimes it’s off-color and it’s not appropriate and people don’t appreciate it.

4 – How do you handle all the e-mail that comes into you?

30 or 40 messages can be a fair bit when you have things you have to act on, but it’s not a lot if they’re things you can just look at it and see that you’re not interested in it. I’ll generally open every message and then put it into a file or delete it.

Managing messages really takes the time, cleaning your inbox or moving it to a file folder or send out a quick response. Your inbox and sent box have limits, and that requires several hours a week to clean out your inbox and your sent box if you let it build up. I have 532 items in my inbox right now, four unread. I’ve got about the same number in my sent box, and I have to go through and . . . . You need to keep some of those sent messages as an archive copy. You need to make decisions on every one of those. We’re charged so much per day to keep things on Central Storage, so you’re under constant pressure to keep your folders pared down.

5 – Do you set any filters (human or technological) on the e-mail you receive?

I don’t. Basically, if I got a lot of messages that were junk I’d want to use one, but I don’t.

6 – How do you think policies would be received by workers here?

Some people can’t resist sending a joke that they receive, but we put out a policy that that kind of stuff is not right. It takes up time and memory, both of which cost money, plus sometimes it’s off-color and it’s not appropriate and people don’t appreciate it.

We were just talking earlier this week about purchasing a CD-ROM drive to archive all our old messages, so that’s something we might think about.

Policy implies dictating. I think something better would be guidelines or recommendations or suggestions, some tips that might include stuff like the basics, like reading your mail daily or how to use Outlook. There probably should be some training on the labor saving functions on Microsoft Outlook. I think there are a number of them.

7 – Do most of your colleagues appreciate having and using e-mail?

There are some guys who work for me with a different personality type, and they think their real work is meeting with customers or something, and they think that e-mail’s a nuisance. Their approach is that they’ll look at it once a day or wait until I send a second
or third message. Sometimes I send a message and I need a response on something and they won’t even open it, because I put a return receipt on it. Because their personality type is that they don’t want to worry about e-mail. Their approach is that is nobody calls me on the phone or sends me another e-mail, they’ll wait a few days and delete it. That frustrates me with some of my subordinates.

8 – If you could recommend one way to make e-mail more effective in this organization, what would that be?

What I’d like to be able to do is have a way that marks a message as Action or Information, something that marks “This is an action message” in the subject line or something. Maybe that would be the guideline or the policy. I’d like some way to know if it’s an action message.

9 – Do you have anything more you’d like to add on this subject?

I feel stressed by e-mail; I wouldn’t necessarily say I feel stressed out. As a manager I have a lot more responsibilities. It puts a lot of pressure on my day, because there’s easily two hours a day spent on e-mail. That’s not all that bad, because it’s real work getting done and it makes you more efficient, but I definitely feel the pressure of dealing with it and responding to it.

The nice thing about e-mail is that it gives you a record copy. Another thing is that people’s schedules are very disparate, and so you may wish to talk with someone, you may have to have a dialogue on e-mail, and that means it’s slower, because you ask a question and they have to respond and so forth. It may take a day or a couple of days to resolve the issue by e-mail, whereas in a phone conversation you might have been able to do it in 10 minutes. On the other hand, if they’re not available it does facilitate that.

You find out what people like, and you tailor your communication to their likes. And if the people are in the building you can always do the most effective thing, and that’s go down to their desk and they have to deal with the issue. E-mail or voice mail are more time-saving and effective but if it’s really important, you go to their desk.

I’ll send out an e-mail to someone and then I’ll see him and say, “I sent you an e-mail; you need to read it.”
Mindy—Middle Manager

1 – What is your experience with e-mail here in the office?

It's almost like a third arm, an extension of everything I do here. The first activity when I come back in the office is to hit the button to see what e-mail I have. It's a constant prompter or reminder of things to do. I use it much more than the telephone or any other means of communication. It's the first application I open when I turn on the computer. It's mandatory.

When it first was introduced, most of us didn't want it. The last thing I needed was something else to bug me, but I wasn't thinking far enough ahead to how it could replace paper and phone calls and meeting scheduling problems. It's only about 3 to 4 years ago that I really became devoted to using e-mail, and now I think it helps me get twice as many tasks accomplished in the same time. Of course it brings in about twice as many, but it brings them in quicker so I can resolve them quicker. It's good for quick communication and quick feedback.

2 – How much e-mail do you send and receive each day? Do you ever feel overwhelmed with all that e-mail?

The last time I took a vacation day, I had a day and a half and I had 169 e-mails. So that gives you an idea. It probably averages about 100 a day [received]. About 25-35% require some action on my part. I probably don't send more than 30 a day, and it's usually 5 to 10 a day would be normal.

3 – Could you categorize the types of e-mail you typically receive?

I don't think I get a lot of junk e-mail. My folks are good about not copying me on trivialities. I get only, maybe 10 or 15% would be stuff that I don't really need.

Almost entirely internal, and by that I mean [our company] (and that could be from anywhere). Maybe about 10% is external right now, but I'll bet in a year's time it will be much different. People are getting on board with e-mail. Talk about a paradigm shift.

4 – How do you handle all the e-mail that comes into you?

I have moments when I feel overwhelmed. I came back from some meetings yesterday and the e-mail had gotten backed up about 49 e-mails, and there's that momentary flash when you see the inbox with 49 e-mails. You think, “Oh, my gosh.” Then I do the first quick pass and scrub through them and once I see that of the 49, only about 8 or 9 are things I really have to spend time on. Usually I can scan the subject and the first line, but sometimes I have to open them up. It also depends on who it's from. If it's from [my
boss]. I tend to read the body of it a little closer. By the end of an hour it’s down to a short list.

It’s probably about 1 ½ to 2 hours a day that I spend on my e-mail, since it’s the primary means of communicating. A lot of it is transmitting other kinds of work, like transmitting spreadsheets or a document, so e-mail becomes a support tool to disseminate that information. Outlook is a great tool for scheduling meetings, and it didn’t take me long to get on board with this, and now it’s mandatory in my group. There’s no better way to schedule a meeting.

5 – Do you set any filters (human or technological) on the e-mail you receive?

I primarily do it myself. If I’m out for a long time, my assistant does. She has access to my account, but she just eyeballs it. Pretty much I do my own; she’s just there as a backup.

6 – How do you think policies would be received by workers here?

There’s nothing definitive. I don’t know if we have anything written. We don’t see too many jokes or things coming through the system. I think if maybe we have a policy, either written or verbal, it’s to use the e-mail for business, and that’s what I see, about 99.9% of it appears to be for business only.

I can’t imagine how we could do a policy. It seems that every manager has his own take on what they want to see. I have my own policy that I can give to my staff verbally that says, “Don’t copy me on everything you’re doing to show me how busy you are. Copy me on things that you may not need me to take action on, but things that if I were surprised by it would be a negative thing, so keep me in the information loop.” I’ve had a couple of occasions where I’ve had to step in and said, “Stop sending e-mails. Get together and do it verbally.”

7 – Do most of your colleagues appreciate having and using e-mail?

Everybody now has become dependent on it. Losing e-mail would be like losing a leg. It would be like what happened if you lost your phone or your cable TV. Fifteen years ago it was no big deal, but now it’s a necessity. I don’t see much resistance. People who are overloaded see it as a tool.

I’m not one of the guilty parties, but one of my compatriots spends 16 hours a day, working here till 10 at night. When I travel I can carry my laptop and then the e-mail’s not such a burden when I come back.
8 – If you could recommend one way to make e-mail more effective in this organization, what would that be?

I would make it mandatory that people read and respond. I'd also have the IT folks ask users what upgrades are needed, find out what we like and don't like.

9 – Do you have anything more you’d like to add on this subject?

I get a physical response sometimes, kind of a knot in the stomach. It’s tiring emotionally, but it’s only momentarily. Then after 2 or 3 minutes scanning it and you see that it’s not so bad.

It’s a wonderful tool now if used correctly. It can be abused. Like anything, it can used in a negative way. That’s the kind of thing I’m not sure you could make a policy decision. Those exceptions aside, I think it’s become the most valuable single tool I have as a manager. Time saving, especially as businesses downsize over time and work requirements go up as manpower goes down, it seems like everyone needs to do more. I can certainly do three times or more the communication with e-mail than I could ever have done with paper.
Boyd—Senior Manager

1 – What is your experience with e-mail here in the office?

It’s a blessing and a curse. The speed by which you can communicate information both internally and externally; it’s phenomenal. The cost is low. For sending several paragraph messages to a lot of different people very quickly, it’s excellent. But, people seem to have forgotten that there’s more than one method of communication other than the Web. They’ve forgotten there’s something called voice mail, something called the telephone.

One colleague had his secretary send an e-mail that said, “Look at the attached document.” So after taking the time—about 45 seconds—to download the document, there’s this one-paragraph letter, and you go, Oh! That’s an abuse [of e-mail]. Other examples are long attachments like 27-page documents. I don’t have time to look at all that, so I ask my assistant to print it out and I’ll read it on the airplane. So instead of using copiers that are designed for low-cost per page reproducing, we’ve gone over to these very expensive laser printers. It just doesn’t make sense. Now for the sender it’s very simple, but for the receiver . . . .

2 – How much e-mail do you send and receive each day? Do you ever feel overwhelmed with all that e-mail?

I probably get 45 to 55 messages on a given day. I probably send 10 or 20. I use it as a tickler. Outlook has a meeting planner; that’s an excellent tool. I hate it when people use e-mail to ask, “Are you available at this time?” What they ought to do is check Outlook for scheduling a meeting. You just click and it’s all done.

It used to put me in stress from overload, but no more. First, I’ve grown accustomed to it. Two, I just delete a lot of the stuff. With Outlook you see the first three lines or so and I scan it, and if it’s not interesting or important, I can just kill it.

I’ve been in the job about 2 ½ years, and at first I felt that I had to read everything. Now I’ve become more comfortable, more confident.

3 – Could you categorize the types of e-mail you typically receive?

I receive probably 90 or 95% internal. It’s also a great way to communicate with customers. I don’t get unsolicited messages. There are some things I’ve signed up for—listservs—but I don’t even look at those now. You just get inundated with all that crap.
4 – How do you handle all the e-mail that comes into you?

What I do is if I’ve been out of the office, I anticipate that I’ll have 55, 60, 70 messages, and I try to come in a little early and have some quiet time. I can scan the messages and automatically delete a lot of the messages. Then I’m down to about 35, and about a third of those are FYI that you can scan and chuck those, and maybe another third that I can send to my assistant to please print it, and another third that I need to respond to.

With e-mail, there’s the expectation that because it’s on e-mail, it’s going to be immediately reviewed. The other thing is that even if you’re out of town, if you haven’t read it and acted on it, shame on you. So what I’ve learned to do is use the auto-office, and I say I’m out of the office, I don’t have access to e-mail. If it’s really important, here’s my cell phone number or get to my assistant and she’ll get it to me.

5 – Do you set any filters (human or technological) on the e-mail you receive?

I don’t use filters. I’ve made various attempts at that. Once I had my assistant just print things out, but there was too much. It’s easier to just do it myself.

6 – How do you think policies would be received by workers here?

I’d call it a practice or a guideline. I think it would help, something that can be put in a very concise format. Ask people to think in terms of the receiver. Is e-mail the best way to communicate with them? Keep messages short and send out a notice that says a longer message is coming in regular mail. E-mail is just another form of communication, so think about what you’re communicating and who you’re communicating it to, and what’s the most appropriate way to communicate it.

This guideline could be sent out top down. If the management team would all agree on it, then they could pass it down to their teams and have them pass it down, I think that would work. It could be introduced in that format.

7 – Do most of your colleagues appreciate having and using e-mail?

I think that I kind of like it as a form of communication for short, bursty things. You can sit there at 6 o’clock at night or 6 o’clock in the morning and send out a whole bunch of stuff and it doesn’t matter where they are and they’ll respond, and you have a paper trail. That paper trail’s a good thing. The people who work for me have adapted. It’s more positive than negative. There’s certain things that it’s really good at, being able to forward, the paper trail. It’s just the abuses that’re bad.
8 – If you could recommend one way to make e-mail more effective in this organization, what would that be?

Use e-mail with other technology. Don’t send 27-page documents—like spreadsheets or presentations—on e-mail.

Don’t always reply to all.

Think about what message you’re delivering, to whom, and how you want it received, and then ask yourself what’s the best method. It’s not necessarily e-mail. In person maybe, or on the phone. There’s some things where you want the immediate back and forth. E-mail doesn’t do a good job of communicating emotions.
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Lloyd—Senior Manager

1 – What is your experience with e-mail here in the office?

E-mail is indispensable at the moment. I use it a lot. It’s indispensable for getting a lot of information to a lot of people. For example, just this morning I saw something that happened and I sent an e-mail that said, “Look, something’s not right and I don’t know just what. We need some dialogue on this,” and so have an e-mail dialogue. We have people in my organization all over the country, so it’s tough to get everybody in the same room, so it works great.

I particularly like that I can put something into someone’s [e-mail] box, and they’ll get to it. You don’t have to catch them on the phone. I can be here at 10 o’clock at night and give something to do without ever talking to them. I used to ask people to do something and I didn’t remember if I asked them, so I had to carry an action folder. Now I don’t [have to do that].

There are advantages and disadvantages with it. When I’m talking to you or talking on the phone, I’m not going to call you names or yell at you. At least it’s more measured, but it’s easy to send flamegrams on e-mail. Also, it’s a little too easy to copy the higher ups in the world, but I don’t know that that happens too much.

2 – How much e-mail do you send and receive each day? Do you ever feel overwhelmed with all that e-mail?

I get probably 35 or 40 a day. I was just out five days and I had 140 waiting for me.

If it’s one of those days that I feel like barking out orders I send hundreds. There are some dangers with it. I’ve found myself typing hategrams and sending it and saying, “Ooh, I wish I hadn’t sent that.” So it’s too easy to spout. Now with Outlook there’s a recall ability, so I can pull it back.

I only feel overwhelmed when I get back from vacation. Like yesterday, I had 140 messages. I was going through my e-mail, and I read them all at once. I leave them in my box if I need to get back to them and get rid of the ones quickly if I don’t. I bet 15% of the ones I get are organizational items, and I don’t care about that, so I just delete, delete, delete. I feel overwhelmed, because half the ones I get are information. The other half are things I usually respond to or things I asked for.

I don’t think I feel so overwhelmed. If something’s just going to sit there for info only, I kill them. My colleague next door is always having 100 or 150 messages in his inbox. He goes and cherry picks which ones he’s going to read first, but I just go and start at the bottom and read to the most current. If there’s nothing important, I just delete it.
My people are pretty good. They let me know what I need to know. They used to let me know everything, and I said, “Why are you sending me all that? If you need me to make the decisions, one of us isn’t necessary, and it sure isn’t me.” So they changed. Not all of them, but most. Lower level folks sometimes send me an e-mail saying, You might want to take care of this, and all of a sudden there’s 14 e-mails on this one issue. Finally, one manager at a level below me says, “I object strenuously to this message being sent directly to [the senior manager]. This should have been handled without going directly to me.”

3 – Could you categorize the types of e-mail you typically receive?

I get about 98% internal. I get almost no spam at work. We [the organization] have a filter. I get tons of spam at home, but not at work. We have a pretty good firewall that keeps that stuff out.

4 – How do you handle all the e-mail that comes into you?

The only thing I delete without reading are confirmations that messages I sent have been read. I try to keep on my screen just messages I need to work on. I spent five hours on e-mail yesterday, but I guess I spend 5-10 minutes an hour each day on e-mail. First thing in the morning I’ll spend 15 or 20 minutes on it, and then throughout the day I’ll work on it as messages come in. I don’t let it sit there till I go home.

5 – Do you set any filters (human or technological) on the e-mail you receive?

I don’t use filters.

6 – How do you think policies would be received by workers here?

We may have a policy, but it’s not understood well, it’s not communicated well. I’ve never seen it. It’s just an unstated thing that people suggest not to keep forwarding, forwarding, forwarding. I have a personal policy, I don’t send blind copies anymore. I got burned once, so I don’t do that anymore.

Policies wouldn’t be wise here. What’s proper mean? It’s a communication tool. It’s just too restrictive.

7 – Do most of your colleagues appreciate having and using e-mail?

The really good thing with Outlook is the calendar function. My calendar’s on Outlook and that’s useful for getting a meeting with six people, and you can send out a meeting notice on e-mail. So I can get back messages on the five people that can make the
meeting. So that’s very useful. They only reply to the sender. It happens all on e-mail. Most people are now using the calendar function, about 90%.

Another useful part of e-mail is being able to send to Taiwan or other places. They send me long messages that I need for my work.

8 – If you could recommend one way to make e-mail more effective in this organization, what would that be?

One of my pet peeves is when somebody sends an e-mail and they include an attachment of one line. Also, we’re still in this paradigm of using paper that’s completely unnecessary.

I could also kill all these stupid organizational announcements, but on the other hand, I really want to know.

I don’t know how we ever got by without e-mail. When I came here in 1992 we had no e-mail. Productivity was much lower, so you didn’t accomplish as much as you do today.

Another drawback is that it’s so easy to ask for “stuff,” and I ask for a lot of stuff. It’s hard to keep track of everything you ask for, and for the fellow receiving it, he has too many things being asked for. He just deletes them, and he may not know he’s letting things fall through the crack. I do the same, because it’s my philosophy that if they really want it, they’ll ask for it again. Then I delete it again, and eventually, if it’s really important, someone else will ask for it, like my boss. He’ll say, “You really need to do this one,” and I say, “Okay.” It’s so easy to ask for “stuff.”
Company B Interviews

Mike—Senior Manager

1 – What is your experience with e-mail here in the office?

I’d say there are three major categories of things that I interact with: one would be straight information exchange, for example, information on our customers and competitors, and articles. Another piece would be review of documents and agreements and things like that. This has really increased a lot in the last two years. Everybody gets to look at agreements you’re going into with another company, and everybody gets to look at it and make comments. Lastly, we get into a lot of short e-mails that put people on notice for things, trying to tell people about things. Often we’ll use the phone for this sort of thing, but if somebody has seen something and wants to make others aware, instead of making six or seven telephone calls, it’s easier to send an e-mail.

About 10 to 20% of all e-mails that I receive are responding or forwarding a message.

E-mail helps some. I think like any of the technology stuff, I think it tends to cram a lot more into your day, and you end up doing more than you would have if you didn’t have the tool. The tool makes some of the communications a little bit more efficient, and it makes them a little bit more direct, but there’s a burden, we’re sort of overburdened with it. We see some benefits from it. For example, if we have a legal document and we have to get 10 people to comment on it, we can do that in days, whereas it used to take us a lot longer. But I think you have a price to pay for that. There’s a burden that comes from other things you end up doing.

We get a lot of redundancies. I’ll get summaries of articles from The New York Times, and then I’ll get the same article on e-mail, so that’s not real efficient.

2 – How much e-mail do you send and receive each day? Do you ever feel overwhelmed with all that e-mail?

I recently came back from almost three weeks’ vacation, and I had 246 messages in my inbox. I’d say I get 20 a day, minimum. I send less than I receive, but that’s the nature of my [senior] position.

I try to keep my e-mail current. It’s here to keep me informed, so keeping it current helps me.

I’d probably say I get less stressed on e-mail than on voice mail. When I call up voice mail and I hear, “You have 21 messages,” I think, Oh, no. I think the reason is that I probably have a little more control over e-mail than over voice mail. With e-mail I can
scan, delete, move over, so there’s a little less stress with this than with the other, but I
don’t think I get any more stressed with e-mail than with anything else.

3 – Could you categorize the types of e-mail you typically receive?

Not much junk mail. I get a lot of spam at home, but not at work.

I’d say I probably get 90% internal, about 10% external.

4 – How do you handle all the e-mail that comes into you?

When I came back from vacation, for example, I sorted on the “From” box and then I
looked at all of those from [another manager] who sent me a lot of articles, so I probably
eliminate about 50 right off the bat. By looking at the subject line, a lot of it was
redundant, things that I already knew. There are things that I get that have already
transpired, like meeting notices. So I ended up whipping my way through that. So then
in the course of a couple of hours I probably looked at a hundred of them. So I use a
procedural type approach towards it to say, Hey, sort through this, what do I have here?
What can I get rid of? What should I save? How should I do this? It replaces a lot of
things that I would have used to keep current on things.

I’d say I spend about an hour and a half on e-mail each day. That includes composing,
reading.

5 – Do you set any filters (human or technological) on the e-mail you receive?

No, I don’t. There’s some filters that you can apply, but no, I don’t use them.

6 – How do you think policies on the use of e-mail would be received by workers here?

We have a policy on the appropriate use of computers, for example horseplay or going on
the Internet for inappropriate purposes, things like that. I’ll say this: we don’t condone
the use of computers for non-business purposes, so therefore if someone is carrying on a
chat over e-mail, that would be considered improper use or purposes. But we don’t have
anything that specifically addresses e-mail we have broader policies that addresses our
systems in general.

We’ve had some situations of abuse of the Internet and we’ve had to take disciplinary
action. I think because of human nature that’s going to be an ongoing problem.
7 – Do most of your colleagues appreciate having and using e-mail?

We talk about e-mail as a tool, not as a problem. I know that there’s a high level of frustration when the network goes down and you can’t get to your e-mail. A lot of people depend on it for what they do. The lawyers, for example, are right now heavily dependent on e-mail systems because that’s how they do all their legal documents back and forth. E-mail becomes a concern and a frustration only when it’s not available. It becomes a part of all that you do.

E-mail used with FAX machines and cell phones and things like that, it’s made so much more available, so much more convenient. I think it’s the combination of things that causes some stress. I don’t think there’s any question about that. You know, downsizing has been a big thing and everybody’s trying to do more with less and then we throw all the tools in place and try to get things to you faster and more efficiently and there are some implications. That comes at you pretty good, and creates some stress.

8 – If you could recommend one way to make e-mail use more effective in this organization, what would that be?

I think we need to emphasize our principles of how to communicate. When we’re on e-mail, we have a tendency to write like we talk. I guess one thing I’d say is that we need to put our main ideas up front, in the subject line or in the first line or two. That would help a lot, letting me know what it’s about.

9 – Do you have anything more you’d like to add on this subject?

We’re still pretty tied to paper, and we haven’t decided on any guidance or a policy about where we’re going, where we want to go [with e-mail]. That’s probably something we want to explore. Heavy attachments that use graphics or pictures still take a lot of time.
Sue—Junior Manager

1 – What is your experience with e-mail here in the office?

I had never done anything with e-mail as recently as 1995, and now I disseminate information to people selectively within our organization who have a need to see these articles. I probably send out 10 to 15 e-mail a day with articles from Lexus/Nexus. I decide who will get these articles on e-mail, and the people higher up in the hierarchy usually get more articles, because they need to see everything. I try to make the e-mail title obvious so they can want to read the information or be able to delete it quickly if they’ve already received that article. That’s one way that I can deluge the managers with info. It’s intelligent information. [Before I came on board], our managers realized that they were not getting competitive information disseminated. It’s hard for the managers to sit down and read through all the papers, and so having it on e-mail makes it easier for them. They like the idea of the information coming to them. They’re keeping up to date, even if they read only the first paragraph or first sentence of the news article, they’re very much aware that something’s happening.

I copy and paste all Lexus/Nexus articles onto e-mail. As we develop our intranet, I’m going to create industry news for each day and put the articles into a folder. The problem with that is that it doesn’t put [the article] in front of their face. On the other hand, it causes other people to see the articles that I might not have thought about. I probably spend between one and two hours a day on this. So I’m probably contributing to the managers’ overload.

I’m kind of bothered by the fact that e-mail may be keeping people from talking to one another on the phone or face-to-face. A lot of times it’s sort of irritating because you could pick up the phone. Those are the things that I think are sort of bad. Some people tend to want to use e-mail instead of talking to you. That puts them off in a corner, and people tend to want to overuse it. That’s bad for our communication skills. E-mail has taken the place of people talking to one another.

2 – How much e-mail do you send and receive each day? Do you ever feel overwhelmed with all that mail?

I might send 25 to 30 e-mails a day. I use e-mail if I want to document something. Otherwise I’ll probably pick up the phone and call someone if I need to schedule something. What worries me is that you have no chron[ological] file. That’s a concern, that there’s no documentation. Who’s documenting for the company? That’s the scary part of e-mail.

I receive probably 10 to 20 e-mails a day. I really don’t feel overwhelmed.
3 – Could you categorize the types of e-mail you typically receive?

I’ve signed on to more and more news services to get current news. I get almost no unsolicited e-mail, advertisements come in occasionally, but not much at all. Most of my e-mail is internal.

4 – How do you handle all the e-mail that comes into you?

I leave e-mail up all day and if it’s a simple request or response, I’ll respond to the message right at that point. If it’s not that important, I’ll read it and delete it at that moment. If it’s something that I want to leave up, I just leave it in my in-basket or put it in an e-mail folder. Then I handle my mail throughout the day, when messages come in.

5 – Do you set any filters (human or technological) on the e-mail you receive?

No, I’m not filtering anything out.

6 – How do you think policies on the use of e-mail would be received by workers here?

You’d like to believe people would automatically know, but we’re at a point now where we’re going into unknown territory. Yes, I think people are better off having rules set up for them, because you need structure, and with structure, that’s how you deal with them. Without that structure, you probably end up doing more, because you don’t know where to stop, and nothing’s off limits. So you need to be told what’s off limits. We’re written procedures for everything else, so yes, I think you should have some procedures. There are procedures about using the computers for just company stuff, so people should know and take it a step further.

7 – Do most of your colleagues appreciate having and using e-mail?

One person I know had something like 500 documents on his computer. How can you find anything? I got him to put things in folders, and now he can find things. I was like that once.

Some complain about the volume of e-mail sometimes. That’s why I was concerned about the numbers of e-mail I sent, but I’ve gotten only positive comments about my mail. I think people are sometimes hungry for information. Mine are more information, and they don’t have to do anything with it. It’s annoying when people use e-mail to schedule meetings and don’t follow up with a phone call. I’ve missed meetings because of that. E-mail creates an expectation that people will always be checking their e-mail.
8 - If you could recommend one way to make e-mail use more effective in this organization, what would that be?

I don’t think they should use e-mail to get out of verbally communicating. I think that to me is the biggest negative.

They should be taught structure, taught how to set up files or folders for tracking. You may even want to identify major folders or an archive. Maybe if you create on the server, so you could put it onto a big file and go into a chronological file. Then you’d have your tracking on a big project.

9 – Do you have anything more you’d like to add on this subject?

A lot of people use e-mail to avoid picking up the phone. When I feel burdened is when I don’t know what to do with the e-mail after I’ve read it, so I think the stress comes from deciding how to handle it. But if you don’t handle it right away, it becomes unmanageable, and soon it becomes worthless. Do something with the e-mail the first time you read it. That’s one of those . . . packrats like to keep everything. The value of e-mail is that it keeps things current.
George—Middle Manager

1 – What is your experience with e-mail here in the office?

I send and receive information on a daily basis. It's another tool, I'm kind of neutral about its merits. It's neither good nor bad. If misused it could be bad, like sending a lot of personal messages or chain mail type of messages—I have seen one or two of those. Probably the most insidious kind of misuse is overuse for just arcane type information that's not that important. It's so easy to send a lot of material and go through and cc people. I have not had that experience here at this location, but I had it at another location before I came here.

2 – How much e-mail do you send and receive each day? Do you ever feel overwhelmed with all that mail?

I get about 10 or so e-mails a day. I send probably three or four, so it's not overwhelming to me.

3 – Could you categorize the types of e-mail you typically receive?

I get probably 90% internal. The rest of the mail, not more than 10%, is from professional societies I belong to.

4 – How do you handle all the e-mail that comes into you?

I hit it first thing in the morning. Now if there's a lot there, I tend not to waste my good hours in the morning doing the mundane stuff, so I'll wait until some down time in the afternoon. If it's important and relevant and I want to go through it, I've found that 80% of the time it's worth looking at. But I try doing that at off-peak times. But I try to clean it off on a daily basis.

When I travel, I've just started taking a laptop, and I both send and receive e-mail. There are obvious barriers, gee this is just something else I have to do, but now that I've done it, it's worthwhile doing.

I spend half an hour a day on e-mail.

5 – Do you set any filters (human or technological) on the e-mail you receive?

No, not that I'm aware of. I did use an assistant at my other position, but not now.
6 – How do you think policies on the use of e-mail would be received by workers here?

I haven’t—it’s not something I would feel compelled to do. Our barriers to communication here are not like other places. A lot of key people spend a lot of time out of town, so that’s a big impediment to effective communication a lot more than the misuse or overuse of e-mail. Sometimes you get a lot of e-mail information, but it’s not always the stuff you want to know about. It’s a little like dying of thirst in the middle of the ocean.

7 – Do most of your colleagues appreciate having and using e-mail?

We don’t express any strong feeling one way or another. I haven’t had any experience where there’s something that needs to be fixed.

8 – If you could recommend one way to make e-mail use more effective in this organization, what would that be?

I couldn’t recommend anything at this location. At the other organization where I’ve worked, people would say things in e-mail that maybe they wouldn’t say face-to-face. A lot of unnecessary FYI copies were sent when you ended up on a lot of people’s mailing lists.

The only thing I guess that I am concerned about with e-mail is that it can become a barrier to interpersonal, face-to-face. There’s probably less face-to-face than is helpful. One thing about e-mail that’s negative in that regard is it makes it less likely that you’re going to have consensus or collegial type input into policy decisions.

9 – Do you have anything more you’d like to add on this subject?

E-mail doesn’t add to stress here. There are potential negative aspects of it, that it’s an alternative to face-to-face communications and larger group gatherings that doesn’t necessarily serve as effective a communication tool as some of the more traditional ones. E-mail is only a tool, not the tool.
Ed—Senior Manager

1. What is your experience with e-mail here in the office?

I use e-mail a lot. It’s obviously a new mechanism to communicate with people and get information out to them as well as to receive information. When I’m out on the road—and I travel a lot—I take along my laptop and I check my e-mail on a daily basis. If I don’t, when I get back after a week of travel I have 160 e-mails, and you get depressed quite quickly.

2. How much e-mail do you send and receive each day? Do you ever feel overwhelmed with all that mail?

Sometimes 160 in a week. There’ve been days when I receive 42, and there’re days when I receive only five, so it totally varies. I probably receive a lot more than 15 every day, and I probably send anywhere from 10 to 20 a day.

It can be depressing. I try to keep my inbox clean. So I print out the items that I want to keep and the rest I get rid of. My intent is to keep my inbox down to just one page. At this point I’m up to, let’s see, 108 items in my inbox that I might have looked at, but I haven’t processed what to do with them. It’s depressing because I have to determine what I’m going to do with them. I have to respond to them or at least read them or determine if I want to file them or what to do with them. I want to try and keep ahead of them, so it’s another mode of work there that I need to get done.

When I got back to those 160 messages, the initial reaction is that it’s an overload of work. You think, “Oh, no, it’s going to back me up all week, and you get all those initial feelings when you see all those messages.” When I see messages that I don’t need, those I feel I can get rid of easily and I don’t have to respond to those. My initial reaction is that the next time I’m on vacation, I’ll take my laptop.

I read all of them—first I read the articles, and some of those I can get through quickly. The ones I know I can get through quickly I go through first. Or if I see some that I feel are important I’ll get to them first. So I get to the quick ones first and then the rest of them when I get the time. Usually I try to read my e-mail—when I’m on the road I do it at night.

I spend about an hour and a half each day, maybe more.
3 – Could you categorize the types of e-mail you typically receive?

I don’t get any outside stuff. It’s all internal to the corporation. Now that means all over the country and in Russia, too. I’m on one list, and they send me a newsletter once in a while, but other than that it’s all internal.

4 – How do you handle all the e-mail that comes into you?

I’m still a hard copy guy. I print it out in hard copy, what I think is important. Eventually I’ll probably switch somehow to folders.

5 – Do you set any filters (human or technological) on the e-mail you receive?

No, I get all the e-mails myself.

6 – How do you think policies on the use of e-mail would be received by workers here?

I think I’ve received some jokes through e-mail. Some of them are funny, I have to admit. It’s not a real problem at this point. I think eventually it probably could, but people are selective who they send them to. I think policies are always needed, and the policy should state that the e-mail should only be used for the purposes of the corporation or the company. But then what happens is that you don’t follow the policy. People don’t follow the policy and they do other things with it, but when it becomes a problem then you fall back on the policy. I think it should be mandated that a policy should be established. We do have one, not specifically aimed at e-mail; it’s a communication policy, so it’s more generic. It covers the Internet and other communications.

7 – Do most of your colleagues appreciate having and using e-mail?

Everyone’s on e-mail right now. It’s a way to communicate, but not everyone enjoys it because some people send things on e-mail that they should communicate by phone, and they think it’s not as personal. So you hear those kinds of comments. I think the ones here—it is the older generation who are reluctant to use e-mail. They’re not as used to using computers. I think pretty much everyone else grasps that e-mail is here to stay. The IT folks are upgrading us to new software.

8 – If you could recommend one way to make e-mail use more effective in this organization, what would that be?

E-mail is quite effective here already. It has given everyone more access to information. The use of e-mail has caused more people to receive copies of something that they probably would not have if they didn’t have e-mail. But full disclosure is sometimes better since it gives people full knowledge of what’s happening. In some cases it’s a
waste of time, but then again, there might be something they read that will benefit them sometime in the future. So I can’t knock it.

I would just emphasize that people utilize it for the benefit of the corporation, and not to take away from their productivity.

9 – Do you have anything more you’d like to add on this subject?

E-mail has allowed businesses to expand in areas of efficiency. It’s allowed more information to get out to people that probably would not have gotten that information in the old world. So I do see it as a benefit.

But I fully realize the abuses that could happen in other places: I just don’t think at this point that they’re happening here. Another problem is that when you’re a top manager, you don’t always know what’s happening with e-mail down there. They’re not going to send me certain things that may be going on down there.
Jack—Middle Manager

1 – What is your experience with e-mail here in the office?

We survive by e-mail; without it, we couldn’t do a thing. It is what allows us to work with less people, as everybody’s trying to do. It opens the door to where we can communicate with our clients and our corporate office and sites that we have scattered around the country and the world without having to carry on a conversation with them, without having to dial a phone or anything. It’s a tremendous time saver for me and for [other managers]. Probably one of the greatest assets we ever put in place is e-mail.

2 – How much e-mail do you send and receive each day? Do you ever feel overwhelmed with all that mail?

I get about 30 or 40 e-mail a day. I respond or reply to maybe about half of those. Then I generate about five or six, so I send in the area of 20 or 25. They go anywhere from two sentences to half a page or a page, never any longer.

People are overwhelmed by work. E-mail’s just a tool that’s being used, okay. As far as being overwhelmed or stressed, I am, but it’s because of the job and not the e-mail. E-mail’s helping me try to keep up. It’s not the e-mail that’s doing it. Everybody’s trying to do more with less, less money, less people, and that’s what causes the stress. Again, if I didn’t have e-mail, with the stuff I have going on, it would be much worse.

3 – Could you categorize the types of e-mail you typically receive?

Probably 90 to 95%—say 90%—are internal. Another 10% come from key vendors, technical stuff, who send me notices of things that I . . . this is mail that I’ve asked to be on so I know what’s going on, and that’s very advantageous to me.

I don’t have any trouble with unsolicited e-mail, because our site down at New Orleans [their headquarters], our firewall, filters out a majority of that out, so we get very little spam.

4 – How do you handle all the e-mail that comes into you?

My e-mail stays on all the time. It notifies me when I get incoming mail, so I can even be over in the spreadsheet or word processing, and with my default, I can just keep this mail up. This is also a tremendous tracking and documenting tool for me. If this was done like in the old days over the telephone, you’d really have no tracking—who said what about what. With e-mail, at the end of the week I can go down and sort very quickly by who it came from and I move it into folders under those people, and I manage it that way.
I'll have 10 or 12 good-sized projects going on at any one time, and that's the only way I can keep up.

E-mail is a tremendous timesaving tool. I try to stay on top of the e-mail. If I know I'm going to be in a long meeting, I take my laptop with the cellular card, so I can get my e-mail without plugging in to anything. I can just click on without bothering anybody, so I keep my eye on it.

I can look at it very quickly and get a good idea of who it's from. I just hit the delete and not even read it. One advantage of Outlook is that I can just read the first line. Now one problem with Outlook is that if you read the first line and delete it, the sender gets a message that says you didn't read it. There are some people [who send you messages] you don't want to do that to. But that allows me to review messages quickly.

People will complain about not being able to get into their spreadsheet or something else and we'll try to get to him in a couple of hours. But if he has trouble with his e-mail, he's going to stand there until [IT] goes to fix his e-mail. That may be the nature of our business, because we have people scattered all over the United States and in Russia. We depend on e-mail; if the mail’s not working, stop the whole place and fix the mail. It’s very important to us.

5 – Do you set any filters (human or technological) on the e-mail you receive?

We have a firewall at our headquarters in New Orleans. I don’t use any filter.

6 – How do you think policies on the use of e-mail would be received by workers here?

Policy is needed. You can’t run an e-mail on this scale without a policy, because it'll get abused. We discourage—actually we prohibit—the use of e-mail for personal use or little notices going all over the place, because it junks up the mail. However, people do it anyway, so if we have people sending out birthday announcements three times a day, I’ll go stop them. That’s traffic, and if you go sending out junk, we’ll go after you for it. Now we just let them know we’re monitoring them, and we haven’t had any problem that I can see.

Now if they didn’t know we were watching them, there might be a problem. You’ve got to have a policy.

7 – Do most of your colleagues appreciate having and using e-mail?

Staff, managers, worker bees all use e-mail heavily. People recognize the importance of e-mail. If Office 97 or Word breaks, they’ll call [Information Technology division]. But if e-mail goes out, they go knock on the door. A big reason it’s so important and become
such a popular tool, is that it cuts out the small talk. It cuts down on the length of time it
takes to negotiate a problem. I can put a two-liner in here, and you can never do that in a
telephone conversation. I guess 80% are very, very happy with it and use it a lot and
really depend on it.

8 – If you could recommend one way to make e-mail use more effective in this
organization, what would that be?

I’d get everything on one mail system. We have two [e-mail] systems right now, and
once we convert everything over to Outlook. . . . One thing we could use is more training
on how to use some of the features in it. There’s a lot more that users can get out of this
tool than they ever have. People need some training in the use of e-mail. You’d see a big
attendance at that. Our first step, though, is to get everyone over onto a single package.

9 – Do you have anything more you’d like to add on this subject?

I would like to have seen the survey worded differently, about what do you think of e-
mail as a tool. When you talk about being overwhelmed, it puts a thought into your
mind. Our company has the corporate office in New Orleans, and a huge amount of stuff
goes on between us. And that’s all done on e-mail. Then we’ve got governmental sites
all over the country, and we’ve got sites in Russia. It’s so important to us. I see that I’ve
got five e-mails just while we’ve been talking.
Doug—Middle Manager

1 – What is your experience with e-mail here in the office?

I probably spend more time on e-mail than I realize, because you do want to respond to things if it’s appropriate. Oftentimes you see something pop up on the screen and you want to respond to it right away. On the other hand, there are times when things batch together, when you get a lot of things all at once. I tend to sort through those, generally by author or by title, just scanning over those, and I pick and choose the ones I need to look at first.

I guess I spend around an hour and a half a day on my e-mail.

2 – How much e-mail do you send and receive each day? Do you ever feel overwhelmed with all that mail?

I receive 10 to 30 e-mail messages a day, maybe closer to 10 to 20. I send on average about five or six e-mails a day. It depends a lot on the type of messages I get in. Some of them I forward, some of them have been forwarded to others, so I don’t need to do anything with them.

The only time I feel overwhelmed is after I’ve been gone a number of days and you look and see that you have 57 messages to respond to, or something like that. That’s the time when you just ruthlessly sort through them and discard the ones you don’t – some of them I don’t even read. I can tell by the title that I don’t need it. It’s a little like the paper pile [of messages], only it’s a little easier to deal with. You can see what you have [with e-mail], and there [in the pile of papers], you can only see what’s on top.

3 – Could you categorize the types of e-mail you typically receive?

My e-mail is predominantly in-company. Many of those that appear that come from outside are actually in the company; it’s just that they’re in different locations that are not on the company mail system. I’d say fewer than 5% are from outside – trade associations, notices about meetings, things like that. Professional societies.

4 – How do you handle all the e-mail that comes into you?

I scan by subject or by author. If I see a message from my boss or one about a particularly important project that may need prompt input, those I look at right away. Some others may have been timely at one time, but sometimes, that opportunity’s past.
5 – Do you set any filters (human or technological) on the e-mail you receive?

I don’t use any filters.

6 – How do you think policies on the use of e-mail would be received by workers here?

Given that we haven’t had much of an overload, my inclination would be to say, let’s leave the policy for the time that it’s going to be needed. If people aren’t using the mail the right way, for non-business purposes – There’s been a comment or two about controlling use of broadcast distribution, but it hasn’t gone beyond the comment stage. We do have a company policy in regards to electronic communication, which e-mail would fall under, and that it to use it for company use only. That probably cuts down on the inappropriate use of e-mail.

7 – Do most of your colleagues appreciate having and using e-mail?

I think so. The thing about e-mail in contrast to, say, voice mail, is that you always know the e-mail’s going to get to the person at the other end. That wasn’t the case when we first started out; we weren’t sure if the server was operating right, it just wasn’t as predictable. It’s also helpful with attachments, to put your comments on it. And it’s quick. It saves people from having to chase a lot of paper around.

There are people who don’t believe you ought to use e-mail very much, that maybe you ought to go see someone face-to-face. There are things that you want to do that for, where you want to pick up the phone and say, hey, what’s going on here. Some people stay behind the screen, and you just don’t see them.

8 – If you could recommend one way to make e-mail use more effective in this organization, what would that be?

This isn’t a huge problem, but I’d say I prefer a brief e-mail message rather than a long attachment that I have to read all the way through. It used to be that attachments were tough to open and it would take a while, but they open up pretty quickly now. Still, if there’s something to say, just say it in plain English [in an e-mail message].

9 – Do you have anything more you’d like to add on this subject?

E-mail’s a helpful tool. In general, most people use the computer for e-mail, for sending and receiving memos. Relatively few people actually do calculations. It’s a great communications tool. It can be overdone. A lot of people tend to want to print off their messages, and I say, why do you want to do that? I don’t know if the computer has been as much of a time saver as some people think that it is. You can always add another revision or something.
E-mail has saved time, but it can lead to a proliferation of messages. As long as it isn’t doing that, it’s a good thing. It’s so easy to use and so user-friendly. You’ve got to think. Is this something that I’d want someone to pass on and on and on, particularly if you’re dealing with sensitive issues? There’ve been times when I said, I don’t think I want this sent to everyone in the universe—not that it necessarily would. Oftentimes I’ll just pick up the phone and talk person-to-person.
CURRICULUM VITAE

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Education:
- Walden University
  Minneapolis, Minnesota
  Doctor of Philosophy. Applied Management and Decision Sciences
  March 2000
- Pennsylvania State University
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  Master of Arts, English
  March 1971
- Pennsylvania State University
  University Park, Pennsylvania
  Bachelor of Arts, English
  June 1969

Positions:
- Liberty University
  Lynchburg, Virginia
  Professor, Business Communications
  July 1996 – Present
- United States Military Academy
  West Point, New York
  Speechwriter to the Superintendent
  May 1993 – June 1996
- United States Military Academy
  West Point, New York
  Public Affairs Officer
  April 1991 – May 1993
- United States Army—South
  Fort Clayton, Panama
  Public Affairs Officer
  April 1990 – April 1991
- United States Military Academy
  West Point, New York
  Deputy Public Affairs Officer
  June 1987 – April 1990
- Office of the Chief, Army Public Affairs
  The Pentagon, Washington, D.C.
  Public Affairs Officer
  August 1983 – June 1987
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<tr>
<td>Ketchum Communications, Pittsburgh, Pennsylvania, Public Relations Executive</td>
<td>August 1982 – August 1983</td>
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<tr>
<td>Defense Information School, Fort Benjamin Harrison, Indiana, Public Affairs Student</td>
<td>June 1982 – August 1982</td>
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<tr>
<td>Personnel Operations Center—Iran, Alexandria, Virginia, Personnel Officer</td>
<td>February 1979 – June 1979</td>
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<tr>
<td>United States Support Activity—Iran, Tehran, Iran, Administrative Officer</td>
<td>January 1978 – February 1979</td>
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<tr>
<td>Adjuant General’s Corps Advanced Course, Fort Benjamin Harrison, Indiana, Personnel/Administrative Officer Student</td>
<td>June 1977 – December 1978</td>
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<tr>
<td>United States Military Academy, Preparatory School, Fort Belvoir, Virginia; Fort Monmouth, New Jersey, English Teacher</td>
<td>June 1974 – June 1977</td>
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<tr>
<td>United States Army Training Center, Fort Dix, New Jersey, Postal Officer/Personnel Officer</td>
<td>April 1971 – June 1974</td>
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Publications:
- Dissertation: “The Role of E-Mail on Information Overload in Organizational Managers”
- Numerous book reviews: *Assembly Magazine*, *Pointer View*