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Factors affecting implementation of voice mail: End user practices and attitudes

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FACTORS AFFECTING IMPLEMENTATION OF VOICE MAIL:

END USER PRACTICES AND ATTITUDES

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Carl Okrah

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CHAPTER I

THE PROBLEM

Introduction

Organizations adopt information technologies to remain competitive, to raise productivity, and to improve decision making (Alavi and Joachimsthaler, 1992; Straub and Wetherbe, 1989). In early studies of technological innovations, it was assumed that once a technology had been adopted, implementation would follow more or less automatically (Tornatzky, et al., 1983). Researchers (Manross and Rice, 1986; Markus, 1983; Kling, 1980; Robey and Zeller, 1978) however, have shown that this assumption is not correct. Adopting information technologies is no guarantee that the technologies will be used.

Recognizing that implementation is problematic, much research has been undertaken to develop a better understanding of the factors influencing technology implementation. Among the factors found to have a significant impact on technology implementation are the perceived usefulness of the innovation, management support of the innovation, perceived pressure to use

the innovation, individual innovativeness, and training (Alavi and Joachimsthaler, 1992; Saunders and Clark, 1992; Schiffman, et al., 1992; Davis, 1989; Rivard and Huff, 1988; Leonard-Barton, 1988; Beswick and Reinsch, 1987; Stewart and Finn, 1985; Zmud, 1983; Rogers, 1983).

Before individuals can implement information technology, they must first know that the technology exists and have some idea of how it functions. The degree to which a clear understanding of an innovation is developed affects its implementation (Gross, Giacquinta, and Bernstein, 1971). Neither knowledge of an innovation nor clarity alone guarantees that individuals will actually use the technology. For that to happen, individuals must perceive the technology as useful to them, be motivated to actually implement the technology, and be skillful in its use (Bostrom, Olfman, and Sein, 1990; Beswick and Reinsch, 1987; Rivard and Huff, 1988; Zmud and Lind, 1985; Gross, Giacquinta, and Bernstein, 1971). The perceived usefulness of information technologies has been defined as the degree to which using a particular system would enhance job performance (Davis, 1989).

Management support of the innovation is a crucial factor in successful implementation (Ein-Dor and Segev, 1992; Lucas, Walton and Ginzberg, 1988; Bikson, Stasz,

and Mankin, 1985; Huberman and Miles, 1984; Radnor, Rubenstein, and Bean, 1968). Individuals who perceive their superordinates as supporting the implementation effort are more likely to implement the innovation than those who do not.

Management support of an implementation effort is sometimes perceived by individuals as pressure to use the innovation (Leonard-Barton and Deschamps, 1988). The degree of administrative pressure has been found to have a significant impact on the actual use of an innovation (Huberman and Miles, 1984).

For individuals within an organization to benefit fully from certain technologies, they may have to pressure their coworkers and subordinates to use these technologies (Markus, 1987; Fulk, et al., 1990). This pressure does not have to be overt to wield considerable behavioral force (Bettenhausen and Murnighan, 1991). Informal rules can "emerge within organizations, work groups, or among peers which subsequently have a strong influence over individual behavior" (Culnan and Bair, 1983, p. 217). Individuals can perceive attitudes, behavior, or statements by supervisors and coworkers as pressure even when objective measures do not reinforce this perception.

Not all individuals within an organization will implement information technologies to the same degree.

Innovative individuals are more eager to try new ideas, have more favorable attitudes toward change, and implement innovations sooner than less innovative people (Rogers, 1983). Innovativeness represents the degree to which an individual is willing to accept change in his or her work environment (Richmond, et al., 1982). The innovativeness of individuals within an organization is an important determinant of the success of the innovation (Leonard-Barton and Deschamps, 1988; Zmud, 1984).

Training is a reflection of management commitment (Saunders and Clark, 1992; Zmud, 1983). The amount of training can have a significant impact on successful implementation of information technology (Schiffman, et al., 1992; Yaverbaum and Nosek, 1992; Bruning and Smilowitz, 1989; Beswick and Reinsch, 1987; Sein, Bostrom and Olfman, 1987; Manross and Rice, 1986). Training introduces users to the skills that are necessary to implement new technology. Individuals can learn these skills through formal training sessions conducted by an in-house trainer, an outside training consultant, or by a vendor. Individuals can also learn the needed skills through self-instruction, from peers, subordinates, or superordinates (Regan and O'Connor, 1989). Although most researchers agree that training is crucial if technology is to be successfully

implemented, there is no consensus on how much training most individuals need to learn to use advanced features of information technologies.

As long as information technology is being used by organizations, factors affecting successful implementation will continue to be studied (DeLone and McLean, 1992). However important and necessary technology implementation research is, investigators usually focus on the technology as a total entity and measure implementation by the number of users or the number of times used rather than by use of specific features of the technology.

This tendency to define implementation as the global use of technology rather than to differentiate between use of its basic features versus advanced features has continued with research on voice mail.

Voice Mail

Voice mail is a computer-based technology that uses a standard touch-tone telephone for input and retrieval. Messages are recorded in the sender's own voice and stored on a computer disk in the receiver's voice mail box. Users can access their messages from any touch-tone telephone, 24 hours a day.

Voice mail use has grown steadily since the early

1980's and began to gain widespread acceptance around 1987. Nationwide sales of voice-mail systems were about $1 billion in 1991 compared with $425 million in 1988. For the next five years, sales are expected to grow annually about twenty percent. The least sophisticated voice mail systems cost a few hundred dollars, whereas more advanced systems cost a few thousand dollars. Major companies' complex systems can cost several million dollars.

The two dimensions of voice mail are call answering and voice messaging (Rice and Shook, 1990). Call answering is the interception, receipt, and storage of messages until the receiver is prepared to hear them. The call answering feature of voice mail is similar to the ubiquitous answering machine. Voice messaging, however, is the deliberate use of the system for asynchronous communication, which means that individuals do not have to be available at the same time to exchange quality information (Ehrlich, 1987).

Voice mail includes a number of advanced features. Among them are the ability to

send messages directly to another user's mailbox;

forward a message to someone else and preface it with covering remarks;

create a list of users to whom one can subsequently send a message without keying in all the

extensions again (this is called group distribution lists); and

record and store a message for future delivery.

Statement of the Problem

Implicit in many implementation studies is the assumption that if a certain number of people are using a technology, the technology has been fully implemented. Most researchers who have studied the factors associated with successful technology implementation do not define implementation by the degree to which advanced features are being used but frequently quantify implementation by the amount of use, such as how many times a day or a week the technology is being used. Yet such quantification may not be an accurate measure of the quality of the implementation since the amount of use does not indicate whether the technology is being used to its fullest potential (Rice and Shook, 1990). Findings from studies that hypothesize about factors influencing technology implementation may lead to an incomplete view of implementation when amount of time or frequency of use is the sole measure of implementation because this quantification does not indicate whether the technology is being used to its fullest potential.

Variables, such as attitudes, perceived pressure by others, and training, have been found empirically to explain implementation of innovations. But these variables may not contribute as much to the variability in the use of innovations when implementation is measured not by a single item, global construct but by a multi-item scale that examines the use of advanced features of technology and the quality of its use. To get a more complete view of the affect of variables such as attitudes, perceived pressure by others, and training on the extent of implementation, the use of advanced features must be examined.

The researcher examined the extent to which the perceived usefulness of voice mail, perceived pressure by supervisors and coworkers to use voice messaging, individual innovativeness, and amount of training explained the extent of use of voice messaging.

Conceptual Framework

Information technologies have the potential to change entire industries (Raho et al., 1987). But although the capabilities of these technologies become more and more sophisticated, the technologies themselves "are under utilized, do not meet their potential, or fail to be used at all" (Lucas, et al.,

1990, p. 1). As early as the 1960's, Ackoff (1960) noted the high rate of failure of information systems. Information systems can and do fail when human factors are not taken into consideration (Robey, 1979; Nickerson, 1981).

Technology implementation research "seeks to understand how systems can be implemented successfully so the organization receives the maximum benefit from its investment in information technology" (Lucas, 1990, p. 1). The implementation factors research approach is the most frequently employed approach to implementation research. This approach to information technology implementation can be traced as far back as the 1960's and 1970's when researchers at Northwestern University conducted a number of studies on implementation (Rubenstein, et al., 1967; Radnor, et al., 1968; Radnor, et al., 1970). Researchers who use the implementation factor identification approach focus on identifying different individual and organizational forces that are important to successful implementation of information technologies (Cooper and Zmud, 1990). The implementation factor paradigm is based on determining which factors (or independent variables) are associated with the successful implementation (or the dependent variable, use) of information technologies. The emphasis is on explaining

implementation success.

The factors affecting implementation have been studied in many different contexts and across varied subject matters and settings. The National Science Foundation (Tornatzky et al., 1983) conducted an extensive review of the literature on technological innovation. This review was done from a general perspective and did not concentrate on particular organizations or specific technological innovations. The researchers concluded that the factors most important to technological innovation in organizations are the characteristics of the implementing organization and its interaction with the technology, and the implementation strategies employed.

Similarly, Abernathy and Utterback (1986) developed a model in which they examined how patterns of innovation within a unit were related to that unit's organizational characteristics, production capabilities and competitive strategies. The model is meant to be applied primarily to production processes in which features of the product, such as incandescent light bulbs, steel, and internal combustion engines, can be varied. Depending on where units are in their evolutionary stages, they will undertake different types of innovations.

A model that is more closely related to this study

is the theory of planned behavior (Ajzen, 1989, 1985). The theory of planned behavior was designed to predict behavior across many settings. The theory of planned behavior postulates that an individual's performance of a behavior is determined by the intention to perform (or not perform) the behavior. According to the theory, there are three conceptually independent determinants of intentions to perform behavior: attitudes, subjective norms, and perceived behavioral controls. Each of these factors is preceded by beliefs.

Attitudes refer to the extent to which individuals evaluate favorably or unfavorably the behavior in question. The attitude toward the behavior is determined by beliefs about the behavior and the individual's beliefs about the outcome associated with the behavior. For example, an individual may believe that going on a low sodium diet (behavior) will reduce blood pressure (outcome) (Ajzen, 1985). Or an individual might believe that using an information technology (behavior) will enhance effectiveness on the job or increase productivity (outcome).

A second determinant of an individual's intention to perform a behavior is the individual's perception of the social pressure to perform the behavior. These perceptions are referred to as subjective norms.

Subjective norms are also determined by beliefs. Subjective norms are perceptions by individuals that referent others believe they should perform the behavior. Referent others are individuals or groups whose beliefs may be important to the individual. Individuals who believe that most referent others with whom they are motivated to comply think they should perform the behavior will perceive social pressure to do so.

A third determinant of an individual's intention to perform a behavior is perceived behavioral controls, which refer to individual's perceptions of the ease or difficulty of performing the behavior. The more resources and skills individuals think they have, the greater should be their perceived control over the behavior. According to the theory, if individuals believe they have relatively little control over the skills needed to perform the behavior, it will be difficult for them to perform the behavior. For example, if individuals believe they do not possess the skills to use a technology, either because others have not taught them or because they have not learned on their own, it will be difficult for them to use the technology.

The researcher used the theory of planned behavior as a general framework to put the variables of the

study into perspective.

Although the present study did not examine intentions to use voice messaging, the theory of planned behavior was useful since this study examined to what extent attitudes, subjective norms, and perceived behavioral controls together influenced the extent of use of voice messaging. The attitudes that were investigated in the present study were individuals' attitudes toward the perceived usefulness of voice mail and individuals' attitudes toward innovation. Subjective norms, in the present study, referred to the extent to which individuals felt pressured by supervisors and coworkers to use voice messaging. Perceived behavioral controls, in the present study, referred to the amount of training in voice messaging that individuals have had.

Using the implementation factor identification approach, this study examined the extent to which attitudes, subjective norms, and perceived behavioral controls together influenced the implementation of voice messaging. The factors of perceived usefulness of voice mail, individual innovativeness, perceived pressure by supervisors and coworkers to use voice messaging, and amount of training in voice messaging were used to explain the extent of use of voice messaging.

Hypotheses

1. The degree of perceived usefulness of voice mail is positively associated with extent of use of voice messaging.

2. Individual innovativeness is positively associated with extent of use of voice messaging.

3. The degree of perceived pressure by supervisors to use voice messaging is positively associated with extent of use of voice messaging.

4. The degree of perceived pressure by coworkers to use voice messaging is positively associated with extent of use of voice messaging.

5. The amount of training in voice messaging is positively associated with extent of use of voice messaging.

6. The degree of perceived usefulness of voice mail, individual innovativeness, the degree of perceived pressure by supervisors and coworkers to use voice messaging, and the amount of training in voice messaging combined explain more of the variability in extent of use of voice messaging than any of these variables alone.

Significance of the Study

Organizations are increasingly adopting information technology to remain competitive, to raise productivity, and to improve decision making. Adopting information technology does not necessarily assure implementation. To increase the likelihood that implementation will occur, it is important to understand what factors influence implementation.

Every member of an organization may even be using a technology, but simply using the technology does not necessarily mean that the technology has been fully implemented. For example, individuals within organizations that have adopted voice mail may be using this innovation simply for call answering and not for its more sophisticated messaging capabilities. As organizations allocate a larger part of their budgets for computer-mediated communication systems such as electronic mail and voice mail, it is important that the technologies be fully used to maximally benefit from them. To get a complete view of implementation, it is necessary to examine whether the advanced features of the new technologies are being used. If the advanced features are not being used, management needs to understand why this is happening, and they will want to develop a strategy to address the factors

that promote their use.

Based on findings from implementation factor identification studies, researchers have indicated that the perceived usefulness of a technology, management support of the implementation effort, pressure by supervisors and coworkers to use the technology, and training are positively associated with implementation. Researchers have found that factors such as attitudes, subjective norms, and skills predict behavior. However, many of these studies have measured implementation through a single, global construct. It is important to know whether attitudes, subjective norms and perceived behavioral controls together explain the implementation of an information technology when implementation is measured by the use of advanced features.

Delimitations

The subjects participating in this study were delimited to those individuals who had been identified as voice mail users by their systems administrator and worked at the corporate office of a Fortune 500 company.

Definitions

Individual Innovativeness refers to the degree to which an individual is willing to accept change in his/her work environment (Richmond, et al. 1982) and to individuals' attitudes toward change (Zmud, 1984). Individual innovativeness was measured by a standardized ten-item Innovativeness Scale (Hurt, Joseph, and Cook, 1977). (See Appendix B, Section II.)

Perceived Pressure by Coworkers refers to informal rules within work groups or among peers which have a strong influence over individual behavior (Culnan and Bair, 1983). Degree of perceived pressure by coworkers was measured by the total score on the four-item perceived pressure by coworkers subsection of the Voice Mail Questionnaire ranging from 1 = No extent to 5 = Very great extent. (See Appendix B, Section V.)

Perceived Pressure by Supervisors refers to subordinates' perceptions of supervisors' attitudes and actions (Mick, et al., 1980). Degree of perceived pressure by supervisors was measured by the total score on the four-item perceived pressure by supervisors subsection of the Voice Mail Questionnaire ranging from 1 = No extent to 5 = Very great extent. (See Appendix B, Section IV.)

Perceived Usefulness of Voice Mail refers to a perceived increase in productivity, perceived increase in job performance, and perceived cost savings due to use of voice mail (Rice and Shook, 1990; Davis, 1989). Perceived usefulness of voice mail was measured by the total score on the seven-item perceived usefulness subsection of the Voice Mail Questionnaire ranging from 1 = Strongly disagree to 5 = Strongly agree. (See Appendix B, Section I.)

Voice Mail refers to a computer-aided telephone system that uses a standard touch-tone telephone for input and retrieval. Each user has a voice mailbox and an identification number (Rice and Shook, 1990).

Voice Messaging refers to the deliberate use of the voice-mail system for asynchronous communication, employing capabilities for processing the communication such as sending messages directly to another user's mailbox with or without a time delay, forwarding messages with covering remarks, and group distribution lists (Rice and Shook, 1990). Extent of use of voice messaging was measured by the total score on the ten item use subsection of the Voice Mail Questionnaire ranging from 1 = No extent to 5 = Very great extent. (See Appendix B, Section VI.)

CHAPTER II

REVIEW OF THE LITERATURE

The review of the literature for this study is discussed in the following chapter. The first section defines voice mail, differentiates between voice messaging and call answering, and delineates the potential benefits of voice mail systems. The second section contains a review of the implementation factor approach literature on the effect of perceived usefulness, individual innovativeness, perceived pressure by supervisors and coworkers, and amount of training on implementation.

Voice Mail

> Probably the most important single change in organizations in the past century is now well under way: the impact of new communication technologies (Rogers, 1984, p. 167).

Voice mail systems are among the information technologies that will be critical to many organizations in the 1990's (Straub and Wetherbe, 1989). Voice mail is a computer-based technology that uses a touch-tone telephone for input and retrieval,

and allows users to access their messages from any touch-tone telephone, 24 hours a day. Voice mail first became commercially available in the early 1980's (Stewart, 1985).

The asynchronous nature of voice mail means that individuals do not have to be available at the same time to exchange quality information (Ehrlich, 1987). Asynchronous communication can be active as in voice messaging or it can be passive as in call answering. When an individual dials an extension and the receiver is not present, the voice mail system will intercept the call, thereby reducing telephone tag. But only voice messaging has the potential to overcome many of the problems associated with telephone communications.

The reason that voice mail is becoming so critical to organizations is that it offers the possibility of facilitating communications and organizations are composed of people who spend the majority of their time communicating (Culnan and Bair, 1983). Improving communications within organizations can reduce the time needed to complete tasks and has the potential to offer a large payoff to organizations (Steinfield, 1986; Culnan and Bair, 1982; Olson and Lucas, 1982).

Among the more time-consuming and unproductive

aspects of office work are shadow functions, which are functions that are not part of the job but integral to its completion (Regan and O'Connor, 1989). Examples of shadow functions associated with the telephone are busy signals, being put on hold, or the called party being out of the office. Media transformations, changes necessary in the medium of the message, such as a secretary writing down a phone message, are another example of an unproductive activity.

Among the benefits of voice messaging are (Culnan and Bair, 1983; Olson and Lucas, 1982; Bair, 1979; Beswick and Reinsch, 1987; Ehrlich, 1987; Ehrlich, et al., 1983):

It reduces interruptions. Deliberately sending messages to a voice mail box eliminates the interruption of the phone ringing. A flashing light or a stuttered dial tone alerts the receiver to a phone message in the voice mail box.

It reduces media transformations. By eliminating the need to transfer a phone message to paper, the original message cannot be misconstrued. Forwarding a message allows the receiver to hear the caller's own words and voice inflections.

It reduces the number of actions required for general information distribution. By using distribution lists, individuals can send one message to

all the numbers on the list, thereby facilitating information flow. Topics can be introduced and responded to by all communicators at their convenience and over an extended time.

It facilitates appropriate forwarding of information. Allows redirection of detailed information to the right individual with covering remarks to provide context information from the middle sender.

It permits individuals to engage in complex communication when away from the office.

Perceived Usefulness

A major characteristic of attitudes is that they imply evaluation (favorable-unfavorable, positive-negative) (Petty and Cacioppo, 1981; Fishbein and Ajzen, 1975). As noted by Ives, Olson and Baroudi (1983), a number of different phrases have been used to refer to essentially the same concept (user attitude): "perceived usefulness" (Larcker and Lessig, 1980), "felt need" (Guthrie, 1974), and "feelings about the information system" (Kaish, 1979).

Perceived usefulness is "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p.

320). Individuals tend to use information technologies to the extent that they believe it will be useful to them personally or in their jobs (Komsky, 1991).

A number of researchers have concluded that individuals' attitudes toward the usefulness of an information system are positively associated with its extent of use (Davis, 1989; Grantham and Vaske, 1985; Robey, 1979; Zmud, 1979). In an extensive review of the literature, Zmud (1979) determined that attitudes are positively associated with the use of information systems. An industrial sales force's perceptions of the effect of a computer based information system on job performance was found to be the greatest predictor of extent of use (Robey, 1979). The perceived usefulness of an electronic mail system was found to be positively correlated with extent of use (Davis, 1989).

Robey and Zeller (1978) conducted a study at two neighboring manufacturing plants of the same organization. Both plants manufactured the same items and had similar organizational structures. The purpose of the researchers was to determine the factors associated with the successful implementation of the information system at one plant and the failure of the identical information system at the other plant. The researchers found that employees within the plant which accepted the system had more favorable attitudes and

perceived the information system to be useful in aiding their performance on the job. The researchers concluded that attitudes of individuals about the perceived usefulness of an information system in improving their performance is a critical and significant factor toward successful implementation.

In a study of the relationship of attitudes and usage, Grantham and Vaske (1985) examined attitudes toward voice mail and extent of use. Unlike the present study, no attempt was made to distinguish between use of voice mail for call answering versus voice messaging. The scale measuring extent of use of voice mail was composed of four items: planning tasks using voice mail, coordinating tasks using voice mail, reporting on tasks and assigning tasks using voice mail. Three of these items have been incorporated into the extent of use subsection of the questionnaire used in the present study. The researchers concluded that individuals' attitudes toward the voice mail system was the strongest predictors of extent of use and explained more of the variance than any of the other independent variables.

A number of studies have been conducted to examine the correlation between the perceived usefulness of computer-mediated communication systems, such as electronic mail, voice mail, and teleconferencing and

extent of use with inconsistent results (Komsky, 1991; Hiltz and Johnson, 1989; Manross and Rice, 1986).

Komsky (1991) examined the relationship between perceived benefits and electronic mail use in a large, suburban university. All non-student users were asked to respond to a questionnaire. Use was measured by time on the system and number of messages sent and received. Frequent users of the electronic mail system were found to perceive more personal benefits from using the system than occasional users.

In a study of the implementation of an intelligent telephone system, attitudes such as ease of use, the status attributed to using the new phones, and the complexity of systems features were not significantly correlated with extent of use (Manross and Rice, 1986). When individuals' attitudes toward the perceived usefulness of the intelligent phone system were correlated with the number of functions used, the researchers did find a significant association.

Hiltz and Johnson (1989) conducted a longitudinal study of four computer-mediated communication systems that were different in functionality and user interface. Two of the systems included a conferencing system and a message system. A third system did not include full electronic mail capability, and the fourth system had no conferencing capabilities. Use was

measured by time online. The researchers found a positive correlation between an increase in perceived usefulness and an increase in use in three of the four systems. The fourth system had fewer advanced features and was perceived to be less useful than the other three systems, but there was no correlation between perceived usefulness and time online with this system. Use was measured by time online. This measurement of use does not indicate whether the technology is being used to its fullest potential. The researchers themselves stated that time online does not distinguish between active and passive use of electronic mail.

In a study of user attitudes as predictors of project success or failure, Ginzberg (1981) found that users who had more realistic attitudes toward a technology used it more than users who had unrealistic expectations. Use was measured by the average monthly usage of an On-Line Portfolio Management system by each manager.

Salespeople with more positive attitudes toward a computer information system, e.g., the sooner the system is in use, the better, used the system more than those with less positive attitudes (Robey 1979). The percentage of customer records that had to be updated annually was used as an indicator of continual use of the system, i.e., if a large number of accounts had to

be updated annually, it was assumed that the salesperson was not a continual user of the system. The average number of customers per account for whom computerized records were kept by salespeople was the second indicator of use of the system.

This researcher examined the effect that the perceived usefulness of voice mail had on respondents' use of voice messaging. Use was not measured by time online or number of messages sent or received but was measured by a multi-item scale that examined extent of use of the more sophisticated features of voice mail.

Individual Innovativeness

Innovativeness has been defined as "the relative earliness or lateness that an individual adopts an innovation compared to other members of the social system" (Brancheau and Wetherbe, 1990, p.119). But time of adoption should not be the only measure of innovativeness (Midgley and Dowling, 1978).

Innovativeness can be defined as a willingness to change and represents the degree to which individuals are willing to accept change in their work environment (Richmond, et al., 1982). Not all individuals within an organization will implement information technologies to the same degree. In any organization, some

individuals will have a more positive attitude toward change and a greater willingness to implement new ways of doing things. Innovative individuals are more eager to try new ideas, have more favorable attitudes toward change, are less dogmatic, and are more able to cope with uncertainty and ambiguity (Brancheau and Wetherbe, 1990; Rogers, 1983).

Innovative individuals reported that using voice mail improved their ability to obtain information (Rice and Shook, 1990). Zmud (1984) defined innovativeness as a receptivity toward change, and, in a study of factors associated with the use of modern software practices, he concluded that receptivity toward change of an organization's members was significantly associated with extent of use. The innovativeness of individuals within an organization is an important determinant of the success of the innovation (Leonard-Barton and Deschamps, 1988; Zmud, 1984).

Researchers have concluded that innovative individuals begin using an innovation before less innovative people. Innovative individuals may begin to implement voice mail before their less innovative colleagues, but will they also become more advanced users before their less innovative coworkers? The present study examined the extent to which individual innovativeness explained the extent of use of voice

messaging.

Perceived Pressure by Supervisors and Coworkers

To achieve the full benefits of voice mail, individuals are dependent on other people's use of the technology (Markus, 1987). For example, voice messaging reduces interruptions by minimizing the ringing of the telephone. But for a receiver to benefit from this feature, the caller must deliberately communicate asynchronously rather than dialing the receiver's phone extension, which would cause the phone to ring. Likewise, forwarding a message with covering remarks permits the receiver to hear the message in the original caller's own voice. But if the middle sender summarizes the original message instead of forwarding it, the receiver will not be able to benefit from this feature of voice messaging.

Individuals benefit from voice mail in direct proportion to the degree that it is used by other members of the group (Beswick and Reinsch, 1987), and voice mail tends to be adopted or rejected by an entire work group (Stewart and Finn, 1985). For individuals within an organization to benefit fully from communication technologies, they may have to pressure their coworkers and subordinates to use these

technologies (Markus, 1987; Fulk, et al., 1990).

This pressure does not have to be overt to wield considerable behavioral force (Bettenhausen and Murnighan, 1991). Informal rules can "emerge within organizations, work groups, or among peers which subsequently have a strong influence over individual behavior" (Culnan and Bair, 1983, p. 217).

Management's communication activities directly influence subordinates' communication activities, and coworkers' communication activities directly influence coworkers' communication activities (Rice and Shook, 1990). In a study of the corporate claims division of a nationwide insurance company, Rice and Shook (1990) found that the number of voice mail messages sent by supervisors predicted the number of messages received by subordinates. Likewise, the number of voice mail messages sent by a respondent's work group predicted the number of messages that the respondent sent. These data were collected automatically by the voice mail system. The researchers concluded that use of voice mail by supervisors predicts use of voice mail by subordinates and use of voice mail by coworkers predicts use of voice mail by others within the work group.

Individuals can perceive attitudes, behavior or statements by supervisors and coworkers as pressure

even when objective measures do not reinforce this perception. Supervisors have a major influence on the behavior of their subordinates (Rice and Shook, 1990; Nutt, 1986; Huberman and Miles, 1984; Mick, et al., 1980; Robey and Zeller, 1978). Subordinates' behavior is influenced not only by management's actions, but also by individual perceptions of supervisors' attitudes (Mick, et al., 1980). "A subordinate's communication behavior is based on his perceptions of his interactions with his superior, not on objective measures of facets of the interaction" (Roberts and O'Reilly, 1974, p. 212). Perceived pressure by supervisors and coworkers to use communication technologies can have the same effect on individual behavior as objective measures of pressure.

Komsky (1991) found in a study of electronic mail users (see discussion in previous section) that 50% of users believed that they were required to use the system as part of their jobs although no job description stated this requirement. She speculated that users may have perceived pressure to use the system because much important information was available only through electronic mail.

Robertson (1989) found that social pressure influenced the extent of use of a word processing package, a presentation graphics package, and a project

management software package. Use was measured by amount of time spent using the software with 0 representing no use and 5 representing more than 16 hours use per week. The study was conducted in a management consulting firm.

Management support of an innovation is crucial to successful implementation of new technology. In a study of two different departments within the same company (Robey and Zeller, 1978), the identical information system was successfully implemented within one department but rejected in the other department. To learn about the factors that accounted for this difference, the researchers conducted interviews and submitted questionnaires to personnel within each department. Subordinates who used the new system were aware of their management's positive attitude toward the new system, and the researchers concluded that strong management support for the innovation was essential for successful implementation.

In a study on the use of an expert system for sales, Leonard-Barton and Deschamps (1988) examined how managerial influence is perceived by subordinates. About half the respondents did not use the expert system until they received a clear indication from management that they were required to use the system.

Although managers and coworkers have been found to

influence successful implementation of technologies, the measure of implementation has differed from study to study. Both Komsky (1991) and Rice and Shook (1990) counted the number of messages sent and received. Robey and Zeller (1978) compared two departments within the same company, one which rejected and discontinued the innovation, and one which accepted and used it extensively. Use was measured as a categorical yes or no. Similarly, Leonard-Barton and Deschamps (1988) measured use as a single item.

When amount of time or frequency of use is used as the sole measure of implementation, an incomplete view of implementation may result because this quantification does not indicate whether the technology is being used to its fullest potential. The present study examined the effect that perceived pressure by supervisors and coworkers to use voice messaging had on respondents' use of the more sophisticated features of voice mail.

Training

Training is another reflection of management commitment (Saunders and Clark, 1992; Raho, 1987; Zmud, 1983). For users to implement information technologies, they must first learn how to use them.

Training enables individuals to learn new skills and concepts which will help them to perform their jobs more effectively (Regan and O'Connor, 1989).

The importance of training in ensuring that information technologies will be used by individuals has been extensively noted in the information systems literature (Alavi and Joachimsthaler, 1992; Schiffman, Mele, and Igbaria, 1992; Nelson, Kattan and Cheney, 1991; Beswick and Reinsch, 1987; Manross and Rice, 1986). Alavi and Joachimsthaler (1992) conducted an extensive review of the Decision Support Systems literature to determine guidelines for the management of implementation. Based on a meta-analysis of 144 findings from 33 studies, the researchers concluded that training increases the likelihood of successful implementation.

Eight large organizations were studied to determine the relationship between training, ability and use (Nelson, Kattan, and Cheney, 1991). A positive relationship was found both between computer-related training and computer-related ability, and between individuals' abilities to use information technologies and their use of them. The researchers concluded that if organizations want individuals to use information technologies, they must be sure that individuals have the ability to use them.

In a study analyzing the implementation of an intelligent telephone system (Manross and Rice, 1986), employees within one building rejected the intelligent phone system, whereas employees within the other building accepted it. The intelligent phone system appeared to be successfully implemented in one building, but use of advanced features was extremely limited. Only three functions unique to the intelligent phone, i.e., features that did not exist on a regular phone, were being used in the building that accepted the new system. The intelligent phone system was mainly being used as a traditional phone system. Individuals complained of not being trained properly and the researchers concluded that low levels of use of advanced features were due, in part, to insufficient training.

Not only training, but the amount of training is an important determinant of the use of information technologies. In a study conducted at an engineering firm, Schiffman, et al. (1992) found that the more training courses individuals had taken, the more knowledgeable they were. Respondents were asked to list the relevant training classes they had taken. Use was measured by the number of business tasks performed using the system, number of software packages used by respondents, frequency of use, and amount of time spent

using the system. The researchers found a positive relationship between the number of relevant training classes respondents had taken and extent of use.

At a pilot installation of voice mail (Beswick and Reinsch, 1987), training consisted of one hour introductory sessions, which emphasized general ways in which voice mail could be used, and follow-up meetings with management and their direct subordinates to develop specific uses for the voice mail system. A number of aids were given to users to help them with systems functions. This study did not examine the use of individual voice mail features. The researchers concluded that training stimulated use of voice mail.

More than one training session is usually needed to cover all the features of most information technologies. A number of researchers (Beswick and Reinsch, 1987; Bikson, et al., 1985; Dooling and Klemmer, 1982; Nickerson, 1981) have found that a single group training session that attempts exhaustive coverage of all features is not likely to be successful.

Individuals can learn to use information technologies through a number of different channels. User training has been found to include (Fuerst and Cheney, 1982) formal classes, procedure manuals, hot-lines to answer specific questions, one-on-one

instructions on how to interact with the system , self-instruction using written documentation, on-line help facilities or voice prompts (Davis and Davis, 1990; Bikson, 1985), personal training from an experienced user (Hiltz, 1984), performance aids (Dooling and Klemmer, 1982), information systems staff, other colleagues within the organization, and vendors (Lee, 1986). Use of an appropriate training method is crucial (Davis and Davis, 1990).

Some people do not learn effectively in group training (Bostrom, et al., 1990). A frequent, and successful, alternative to group training session is coaching by one's colleagues within the organization. In a study of the usage patterns of personal computers by professional workers and managers, it was found that colleagues at work were by far the most widely used source of assistance (Lee, 1986). Of the respondents in the study, 89.4% reported that they had consulted their colleagues about computer usage. Bikson (1985), in a case study of successful implementation of advanced information technology in a large corporation, found that most training was carried out by peers. Informal support was also found to be crucial to continued use of the technology.

The availability of end-user training has been found to be positively related to the use of

information technology (Cheney, Mann and Amoroso, 1986; Mankin, et al., 1984). The present study examined the effect that the amount of training in voice messaging had on extent of use of voice messaging.

CHAPTER III

THE METHOD

The researcher examined to what extent the perceived usefulness of voice mail, perceived pressure by supervisors and coworkers to use voice messaging, individual innovativeness, and amount of training in voice messaging explained the extent of use of voice messaging. This chapter describes the source of data, data collection procedures, instruments, data treatment, and data analysis procedures used for the study.

Source of Data

The unit of analysis for the present study was the individual rather than the organization. By limiting the sample to one organization, organizational variance was minimized. A Fortune 500 organization agreed to anonymously participate in the study. All 285 individuals who had been identified as voice mail users by their systems administrator and who worked in the corporate office of the organization were invited to participate in the study.

A large enough sample size is a necessary condition for achieving satisfactory statistical power to prevent a Type II error (the likelihood of rejecting the null hypothesis while it is in fact true). In a multiple regression equation, for each independent variable there should be a minimum of N=25 subjects (Bausell, 1986). Since there are five independent variables in this study, the minimum acceptable sample size is N = 125. By surveying all 285 employees, it was anticipated that if the goal of obtaining a minimum 50 percent response rate (Babbie, 1973) was reached, the resulting data would be adequate for these statistical tests.

Data Collection

A packet containing a cover letter (Appendix A), a questionnaire (Appendix B), a self-addressed stamped postcard, and a self-addressed stamped return envelope was mailed to each subject at the participating organization.

The cover letter briefly described the purpose of the study and promised respondents anonymity. Participants were asked to return the questionnaire to the researcher by a specified date, approximately two weeks after the date on the cover letter. Participants

were asked to return the postcard to the researcher separately from the questionnaire to guarantee anonymity. The postcard was used to identify those individuals who had not returned the questionnaire and was used for follow-up purposes.

Approximately two weeks after the first mailing, 127 responses (44.5%) were received, and eleven questionnaires were returned to the researcher marked "no longer working here." Three weeks after the specified date on the initial mailing, those who did not respond to the first mailing were sent a follow-up letter (Appendix C), a new copy of the questionnaire, and a self-addressed, stamped envelope. By the end of week five, 35 additional responses (12.2%) were received, and an additional three questionnaires marked "no longer working here" were returned. Of the 162 questionnaires returned by respondents, one questionnaire was discarded because the section on individual innovativeness had been omitted. Therefore, a total of 161 subjects participated in the study. Response rate was determined by subtracting the number of questionnaires that could not be delivered (14) from the sampling frame (285). Then the number of completed questionnaires (161) was divided by the sample size (271) to produce a 59% response rate (Babbie, 1990, p. 183).

Responses from the first and second mailings were compared on all the major study variables. No meaningful differences were found between the prompt and late responses on any of the study variables.

Instruments

A questionnaire consisting of two instruments, the Innovativeness Scale and the Voice Mail Questionnaire, was used to collect the data for this study.

The Innovativeness Scale

The Innovativeness Scale, developed by Hurt, Joseph, and Cook, (1977), was used to measure the individual innovativeness of respondents. The Innovativeness Scale asks about attitudes toward innovation (Rice and Shook, 1990). Responses were measured on a Likert-type scale, ranging from 1 = Strongly disagree to 5 = Strongly agree. Individual innovativeness was measured by the total score on the 10-item Innovativeness Scale. Scores could range from 10 to 50.

Validity and Reliability

The Innovativeness Scale was administered to two

sample populations, college students and public school teachers (Hurt, Joseph, and Cook, 1977). The responses were submitted to principal components factor analysis and varimax rotation. The resulting factor structure for each sample was found to be unidimensional. Twenty of the items had a prime loading greater than or equal to .50 and were retained for the final instrument. Since innovativeness is believed to be a unidimensional construct, and this factor structure was maintained consistently throughout all the analyses, the Innovativeness Scale appears to be a valid instrument.

Further validity for the Innovativeness Scale was reported in a study by Goldsmith and Nugent (1984). The researchers compared scores on the Innovativeness Scale with scores on the Open Processing Scale (Leavitt and Walton, 1975) which also measures innovativeness. The two scales were found to be significantly correlated.

To assess the reliability of the instrument, Hurt, Joseph, and Cook employed Nunnally's (1967) technique for making all possible split-half comparisons. To increase the heterogeneity and size of the sample used in a single analysis, the researchers combined the data from the two samples. The reliability was found to be .94. By combining the data from the two samples, it is possible that the reliability of the instrument may

have been artificially increased.

However, other studies have subsequently demonstrated that the Innovativeness Scale has good internal consistency and reliability. For example, in a study by Richmond and McCrosky (1979) the scale was found to have a .93 internal reliability estimate (split-half, odd-even). In yet another study, Richmond, McCrosky, and Davis (1982) measured the reliability of the IS with four different samples. The corresponding internal reliability estimates were found to be .89, .92, .85, and .87. Goldsmith and Nugent (1984) reported an alpha coefficient of .90 for the Innovativeness Scale. The results of these studies indicate that the Innovativeness Scale appears to be a reliable instrument.

Hurt, Joseph, and Cook (1977) developed a short form of the Innovativeness Scale based on those items with the highest total item correlations. The researchers validated the short form of the Innovativeness Scale by correlating it with the 20-item scale. The resulting correlation was .92.

Further validity for the short form was demonstrated in a subsequent study by Rice and Shook (1990), who administered the short form of the Innovativeness Scale to the corporate claims division of a nationwide insurance company. Rice and Shook

found that innovativeness, as measured by the short form of the Innovativeness Scale, directly predicted substantially greater ability to obtain information from others within the organization.

Hurt, Joseph, and Cook found the internal reliability of the short form to be .89 indicating that it is a reliable instrument. Further reliability of the short form of the Innovativeness Scale was demonstrated by Rice and Shook (1990) who reported an alpha coefficient of .81 for the short form of the Innovativeness Scale, indicating that the Innovativeness Scale appears to be a reliable instrument.

The short form of the Innovativeness Scale was used in this research to keep the amount of questions respondents had to answer to a minimum.

Voice Mail Questionnaire

The researcher-developed Voice Mail Questionnaire was divided into five subsections.

Section I measured the perception of respondents regarding the usefulness of voice mail. Prior research on voice mail (Rice and Shook, 1990; Beswick and Reinsch, 1987) and on the perceived usefulness of an information technology (Davis, 1989) was drawn upon to

develop this subsection. Responses were measured on a Likert-type scale, ranging from 1 = Strongly disagree to 5 = Strongly agree. Perceived usefulness was measured by the total score on the 7-item perceived usefulness subsection. Scores could range from 7 to 35.

Section III measured the amount of training in voice messaging. Respondents were asked whether or not they had been trained in, and from what source they had learned to use, different features of voice messaging. A response of (1) Was not trained to use this feature, was assigned a value of 1 which represents no training. Responses of (2), (3), or (4) indicated that the individual had been trained to use the feature in question and was assigned a value of 2. Scores on the 4-item amount of training subsection could range from 4 to 8.

Section IV measured the perceived pressure by supervisors that respondents have felt, or presently feel, to use voice messaging. Responses were measured on a Likert-type scale, ranging from 1 = No extent to 5 = Very great extent. Perceived pressure by supervisors was measured by the total score on the 4-item perceived pressure by supervisors subsection. Scores could range from 4 to 20.

Section V measured the perceived pressure by

coworkers that respondents have felt, or presently feel, to use voice messaging. Responses were measured on a Likert-type scale, ranging from 1 = No extent to 5 = Very great extent. Perceived pressure by coworkers, was measured by the total score on the 4-item perceived pressure by coworkers subsection. Scores could range from 4 to 20.

Section VI measured the extent of use of voice messaging by respondents. Responses were measured on a Likert-type scale, ranging from 1 = No extent to 5 = Very great extent. Extent of use of voice messaging was measured by the total score on the 10-item extent of use subsection. Scores could range from 10 to 50.

Section VII contained demographic information which was used to provide a description of the sample.

Validity and Reliability

The content validity of the Voice Mail Questionnaire was tested by a panel of experts in voice mail. Selected panelists met the following criteria: (1) an earned doctorate, (2) a published author in implementation of voice mail technology, and (3) experience as a consultant in the implementation of voice mail technology.

Each expert was independently asked to comment on

the appropriateness, clarity, and relevance of each item. Those items which were unclear or ambiguous were rewritten. Those items judged to be inappropriate or irrelevant by more than one judge were eliminated. The revised questionnaire was sent to the experts and approved by the panel.

Once approved by the panel, the researcher mailed the questionnaire and a cover letter to a pilot sample of 23 subjects employed in a company that used the same voice mail system as the sample population that the researcher would be studying. Two weeks following the specified return date of the first administration, the questionnaire was administered to the same sample again. To determine the reliability of the questionnaire, the test-retest method was used for each section of the questionnaire. Pearson product-moment correlation coefficients were calculated between the obtained scores from the first test administration and those obtained from the second administration.

Table 1 shows the results of the test-retest reliability analysis. The correlations of scores from the first and second administration ranged from .87 to .99 indicating that the Voice Mail Questionnaire is a reliable instrument.

Table 1

Test-Retest Reliability Analysis of the Voice Mail Questionnaire

Voice Mail Questionnaire Subsections	*Reliability
Perceived usefulness of voice mail	.92
Individual innovativeness	.87
Perceived pressure by supervisors	.95
Perceived pressure by coworkers	.99
Amount of training in voice messaging	.91
Extent of use of voice messaging	.97

* $p < .01$

Data Analysis

Frequencies were used to describe the sample. Pearson product-moment correlations were computed to investigate the relationship between each independent variable (perceived usefulness of voice mail, individual innovativeness, amount of training in voice messaging) and the dependent variable (extent of use ofvoice messaging.

Multiple regression analysis was conducted to explain the variance in the dependent variable, extent of use of voice messaging, on the basis of the independent variables, perceived usefulness, individual innovativeness, and amount of training combined. Multiple regression analysis is a method for studying

the effect of multiple independent variables on one dependent variable and enables the researcher to learn something about the relative influences of the independent variables (Kerlinger, 1986). Multiple regression analysis was appropriate in this study because it takes the intercorrelations of the independent variables into account and indicates the unique contribution of each variable. Since there was no theoretical order of the independent variables, they were entered simultaneously in the multiple regression equation.

Supplementary analyses were performed to determine if differences existed among the mean scores for the major study variables for groups who differed by the amount of time spent using voice mail. One-way analysis of variance and Tukey-HSD procedures were used to identify significant differences. A significance level of $p < .05$ was used for all procedures.

CHAPTER IV

FINDINGS

The findings of this study are reported in five sections. The first section presents a demographic description of the respondents. In the second section, the means, standard deviations, and reliabilities for each scale are presented. An evaluation of the hypotheses appears in the third section of this chapter. In section four, the findings of the supplementary analyses are reported. In the last section, a summary of the major findings of the study are presented.

Demographic Characteristics

The respondents were employees of a Fortune 500 organization who worked in the corporate headquarters of the organization and were identified by the systems administrators as voice mail users. Of the 271 in the initial sample, a total of 161 usable responses were returned, representing a 59% response rate.

Presented in Table 2 are the frequency distributions for the demographic characteristics of

Table 2

Demographic Characteristics of Respondents

Characteristics	n	%
Gender		
Female	72	45.3
Male	87	54.7
Age		
Under 30	15	9.4
30 - 39	60	37.7
40 - 49	48	30.2
50 - 59	31	19.5
Over 59	5	3.1
Level of Education		
High School	5	3.1
Some College	20	12.6
College degree	64	40.2
Graduate degree	70	44.0
Job Category		
Professional	110	69.2
Technical	5	3.1
Sales or marketing	1	.6
Administrative	16	10.1
Secretarial or clerical	22	13.8
Other	5	3.1
Years Using Voice Mail		
Less than a year	44	27.7
One to three years	80	50.3
Three to five years	21	13.2
More than 5 years	14	8.8

the survey respondents. Two respondents who completed the sections of the questionnaire related to the major study variables omitted the section on demographics. Therefore, the frequency distributions for the demographic variables are based on a total of 159

respondents. Over half (54.7%) the respondents were male and 45.3% were female. Slightly over half the respondents (52.8%) were 40 years of age or older. An overwhelming number of respondents (96.8%) had received college training, and a large majority (84.2%) held a college degree. Forty-four percent of the respondents held a graduate degree. Those respondents who worked in a professional job capacity constituted 69.2% of the sample. About half (50.3%) the respondents had been using voice mail for one to three years. Only 27.7% of the respondents had been using voice mail for less than a year, while 22% of the respondents had been using voice mail for over three years.

Means, Standard Deviations, and Reliabilities

The following section reports the means, standard deviations, and reliabilities for each scale of the questionnaire. Over 95% of respondents indicated that they felt no pressure by supervisors or coworkers to use voice messaging. A lack of variability precludes analysis. Therefore, the following section will not include a discussion of two of the independent variables, perceived pressure by supervisors to use voice messaging and perceived pressure by coworkers to use voice messaging, and they were dropped from further

statistical analysis.

As discussed in Chapter Three, perceived usefulness of voice mail and individual innovativeness were both measured on a Likert-type scale, ranging from 1 = Strongly disagree to 5 = Strongly agree. Extent of use of voice messaging was also measured on a Likert-type scale, ranging from 1 = Little extent to 5 = Very great extent. Amount of training in voice messaging was measured by a checklist, where respondents were asked to indicate for each of the four features of voice messaging, whether or not they had been trained in the use of that feature, with 1 = No training and 2 = Training.

The means and standard deviations of the major study variables are shown in Table 3. The mean score for respondents on perceived usefulness of voice mail was 26.7, out of a possible range of seven to thirty five, indicating that respondents generally perceived voice mail to be useful. The mean score for respondents on individual innovativeness was 41.3, out of a possible range of ten to fifty, indicating that respondents perceived themselves, generally, as being innovative. The mean score for respondents on amount of training was 5.9, out of a possible range of four to eight, indicating some training in voice messaging. The mean score for respondents on extent of use of

Table 3

Means and Standard Deviations of Major Study Variables

Variable	M	SD
Perceived usefulness of voice mail	26.7	6.31
Individual innovativeness	41.3	5.41
Amount of training in voice messaging	5.9	1.45
Extent of use of voice messaging	19.2	8.27

voice messaging was 19.2, out of a possible range of ten to fifty, indicating that, overall, respondents were not extensive users of voice messaging.

To determine the internal consistency of the Voice Mail Questionnaire for this study, Cronbach alpha was computed for each scale of the questionnaire. Table 4 shows the results of these analyses. The alpha coefficients ranged from .82 to .93 indicating that the Voice Mail Questionnaire was a reliable instrument.

Table 4

Reliability Analysis of the Voice Mail Questionnaire

Scales	*Reliability
Perceived usefulness of voice mail	.93
Individual innovativeness	.82
Extent of use of voice messaging	.89

* Alpha coefficients

Evaluation of Hypotheses

The following section describes the analyses and results for the hypotheses of the research study.

Hypotheses

1. The degree of perceived usefulness of voice mail is positively associated with extent of use of voice messaging.

2. Individual innovativeness is positively associated with extent of use of voice messaging.

3. The degree of perceived pressure by supervisors to use voice messaging is positively associated with extent of use of voice messaging.

4. The degree of perceived pressure by coworkers to use voice messaging is positively associated with extent of use of voice messaging.

5. The amount of training in voice messaging is positively associated with extent of use of voice messaging.

6. The degree of perceived usefulness of voice mail, individual innovativeness, the degree of perceived pressure by supervisors and coworkers to use voice messaging, and the amount of training in voice messaging combined explain more of the variability in

extent of use of voice messaging than any of these variables alone.

An overwhelming number of respondents (96.8%) indicated that they felt no pressure by coworkers to use voice messaging. Almost as many respondents (95.6%) felt no pressure by supervisors to use voice messaging. The mean score for both perceived pressure by coworkers to use voice messaging and perceived pressure by supervisors to use voice messaging was 1.1. Responses were measured on a Likert-type scale and could range from 1 = No extent to 5 = Very great extent. When independent variables do not have variance, they cannot be used to explain the dependent variable (Kerlinger and Pedhazur, 1973). Due to this lack of variability, an evaluation of the two hypotheses related to perceived pressure by supervisors and coworkers, Hypothesis 3 and Hypothesis 4, was precluded and further statistical analyses of these hypotheses was not warranted.

Pearson product-moment correlations were computed to test Hypothesis 1, Hypothesis 2, and Hypothesis 5. The results of these tests appear in Table 5.

Hypothesis 1 was supported and was statistically significant at $p < .001$. The coefficient of correlation between the perceived usefulness of voice mail and extent of use of voice messaging was .386

Table 5

Correlations between Extent of Use of Voice Messaging with Perceived Usefulness, Individual Innovativeness and Amount of Training

Variable	r
Perceived Usefulness	0.386**
Individual Innovativeness	0.246*
Amount of Training	0.374**

* $p < .01$; ** $p < .001$

indicating that the perceived usefulness of voice messaging explained 15% of the variance in extent of use of voice messaging.

Hypothesis 2 was supported and was statistically significant at $p < .01$. The coefficient of correlation between individual innovativeness and extent of use of voice messaging was .246 indicating that individual innovativeness explained 6% of the variance in extent of use of voice messaging.

Hypothesis 5 was supported and was statistically significant at $p < .001$. The coefficient of correlation between the amount of training in voice messaging and extent of use of voice messaging was .374 indicating that the amount of training in voice messaging explained 14% of the variance in extent of use of voice messaging.

Since two independent variables, perceived

pressure by supervisors and perceived pressure by coworkers, had to be dropped because of a lack of variability, Hypothesis 6 was rewritten.

6. The degree of perceived usefulness of voice mail, individual innovativeness, and the amount of training in voice messaging combined explain more of the variability in extent of use of voice messaging than any of these variables alone.

The intercorrelations among the variables in Hypothesis 6 are depicted in Table 6.

Table 6

Intercorrelations among Major Study Variables

Variable	Innovativeness	Usefulness
Training	.28*	.17
Innovativeness		.01

* $p < .01$

The correlation between amount of training in voice messaging and individual innovativeness is statistically significant. There is no significant correlation between amount of training in voice messaging and perceived usefulness of voice mail or between individual innovativeness and perceived usefulness of voice mail.

Multiple regression analysis was conducted to test

Table 7

Multiple Regression Analysis of Extent of Use of Voice Messaging on Perceived Usefulness of Voice Mail, Individual Innovativeness, and Amount of Training in Voice Messaging

Variable	b	Beta	t
Perceived Usefulness	.44	.39	4.90**
Individual Innovativeness	.25	.17	2.34*
Amount of Training	1.55	.27	3.78**
R-square = .27		Multiple R = .52	
F-ratio = 19.66**		df = 3, 157	

* $p < .05$; ** $p < .001$

Hypothesis 6. The results of this test appear in Table 7. Hypothesis 6 was supported and was statistically significant at $p < .001$. More than a quarter (27%) of the variance in extent of use of voice messaging was explained by a combination of the three independent variables, perceived usefulness of voice messaging, individual innovativeness, and amount of training. These variables combined explain 12% more of the variance in extent of use of voice messaging than any of the variables alone.

Inspection of the regression coefficients and t values indicate that each variable made a significant, unique contribution to the explanation of the variance in use of voice messaging. These regression coefficients give another view of the relationship

between the three independent variables (perceived usefulness, individual innovativeness, and amount of training) and the dependent variable (extent of use of voice messaging). While zero-order Pearson correlations produce correlations of each independent variable separate from the influence of other independent variables, multiple regression analysis indicates whether there is a significant contribution of each independent variable after all the others have been taken into consideration, i.e., a unique contribution.

Supplementary Analyses

Supplementary analyses revealed differences among respondents' prior experience with voice mail (length of time using voice mail) and two major study variables: individual innovativeness and extent of use of voice messaging. The means and standard deviations for the major study variables for groups who differed by the amount of time spent using voice mail appear in Table 8.

Responses have been categorized according to the amount of time spent using voice mail. The first group consists of respondents who had been using voice mail for less than a year (27.7%). The second group

Table 8

Means and Standard Deviations for Perceived Usefulness of Voice Mail, Individual Innovativeness, Amount of Training in Voice Messaging, Extent of Use of Voice Messaging by Amount of Time Spent Using Voice Mail

Variable	M	SD
Perceived Usefulness		
Less than a year	25.0	6.89
One to three years	27.1	5.70
Three years or more	27.5	6.80
Individual Innovativeness		
Less than a year	40.7	5.07
One to three years	40.4	5.22
Three years or more	43.9	5.50
Amount of Training		
Less than a year	5.9	1.35
One to three years	5.8	1.45
Three years or more	6.2	1.58
Extent of Use		
Less than a year	14.5	6.52
One to three years	19.8	7.82
Three years or more	23.7	8.51

consists of respondents who have been using voice mail from one to three years (50.3%). The third group consists of respondents who have been using voice mail for three years or more (22%).

To determine which of the major study variables was significantly different for groups who differed by the amount of time spent using voice mail, the researcher conducted one-way analyses of variance. The results of the one-way analysis procedures are

Table 9

Analyses of Variance of the Mean Difference of Perceived Usefulness, Individual Innovativeness, Amount of Training, and Extent of Use of Voice Messaging by Amount of Time Spent Using Voice Mail

Source of Variance	SS	MS	F
Perceived Usefulness			
Between Groups	155.02	77.51	1.956
Within Groups	6182.08	39.63	
Individual Innovativeness			
Between Groups	321.82	160.91	5.854*
Within Groups	4288.00	27.49	
Amount of Training			
Between Groups	3.18	1.59	0.752
Within Groups	329.59	2.11	
Extent of Use			
Between Groups	1692.06	846.03	14.457**
Within Groups	9129.01	58.52	

df = Between groups = 2
Within groups = 156
Total = 158

* p < .01
** p < .001

presented in Table 9.

The data in Table 9 revealed that there were no significant differences for the perceived usefulness of voice mail or for the amount of training in voice messaging for respondents in the three categories. However, there was a significant difference for individual innovativeness and for extent of use of voice messaging for respondents in different categories.

Although the one-way analyses of variance revealed significant differences among the mean scores of individual innovativeness and extent of use of voice messaging, the specific categories were not disclosed. To identify the categories of time spent using voice mail with different mean scores, the Tukey-HSD procedure was performed for individual innovativeness and extent of use of voice messaging.

With regard to individual innovativeness, there was a statistically significant difference in mean scores between those respondents who had been using voice mail for three years or more and those who had been using it for less than three years. The mean individual innovativeness score for respondents who had been using voice mail for three years or more (43.9) was considerably higher (more than half the average standard deviation) than for the other two categories (40.4, 40.7).

With regard to extent of use of voice messaging, a statistically significant difference in mean scores occurred between all three categories. The mean extent of use of voice messaging score for respondents who had been using voice mail for less than a year was 14.5 while the mean score for those who had been using voice mail for one to three years was 19.8. The difference between the means for these two groups was

approximately three fourths their average standard deviation. Respondents who had been using voice mail for more than three years had the highest overall mean score (23.7) for extent of use of voice messaging. The difference between the means in each group was approximately half their average standard deviation or greater.

Summary of Results

The purpose of this study was to examine the extent to which perceived usefulness of voice mail, perceived pressure by supervisors to use voice messaging, perceived pressure by coworkers to use voice messaging, individual innovativeness, and amount of training in voice messaging explained the extent of use of voice messaging. Means, standard deviations and reliabilities for the study variables were calculated and analyzed. To test the hypotheses, the data were analyzed through several Pearson product-moment correlations and through multiple regression. Supplementary analyses were performed to analyze the relationship between respondents' mean scores on the study variables for groups who differed by the amount of time spent using voice mail. The following is a summary of the findings.

Hypothesis 1 was supported. A positive association was found between the perceived usefulness of voice mail and extent of use of voice messaging. Fifteen percent of the variance in extent of use of voice messaging can be attributed to the perceived usefulness of voice mail. This finding was significant at $p < .001$.

Hypothesis 2 was supported. A positive association was found between individual innovativeness and extent of use of voice messaging. Six percent of the variance in extent of use of voice messaging can be attributed to individual innovativeness. This finding was significant at $p < .01$.

An overwhelming number of respondents (96.8%) indicated that they felt no pressure by coworkers to use voice messaging. Almost as many respondents (95.6%) felt no pressure by supervisors to use voice messaging. The mean score for both perceived pressure by coworkers to use voice messaging and perceived pressure by supervisors to use voice messaging was 1.1 out of a possible range of 1 to 5. Due to this lack of variability, an evaluation of the two hypotheses related to perceived pressure by supervisors and coworkers, Hypothesis 3 and Hypothesis 4, was precluded.

Hypothesis 5 was supported. A positive

association was found between the amount of training in voice messaging and extent of use of voice messaging. Fourteen percent of the variance in extent of use of voice messaging can be attributed to the amount of training in voice messaging. This finding was significant at $p < .001$.

No meaningful intercorrelation between the amount of training in voice messaging and the perceived usefulness of voice messaging was found. An intercorrelation was found between the amount of training in voice messaging and individual innovativeness.

Hypothesis 6 was supported. The perceived usefulness of voice mail, the amount of training in voice messaging and individual innovativeness together explained more of the variance in extent of use of voice messaging than any of these variables alone. Together, these combined variables explain 27% of the variance in extent of use of voice messaging at $p < .001$ level of significance.

A statistically significant and meaningful difference was found among the mean scores of individual innovativeness for groups who differed by the amount of time spent using voice mail. Respondents who had been using voice mail for three years or more had a higher mean score on the Innovativeness Scale

than respondents who had been using voice mail for less than three years.

A statistically significant and meaningful difference was found among the mean scores of extent of use of voice messaging for groups who differed by the amount of time spent using voice mail. Respondents with greater prior experience using voice mail had a higher mean score on extent of use of voice messaging. Respondents who had been using voice mail for one to three years had a higher mean score on extent of use of voice messaging than those who had been using it less than a year. Respondents who had been using voice mail for more than three years had the highest overall mean score for extent of use of voice messaging.

CHAPTER V

DISCUSSION

The purpose of this chapter is to discuss the findings presented in Chapter 4.

This study used the implementation factors identification approach. The implementation factor paradigm is based on determining which factors (or independent variables) are associated with the implementation of information technologies. Using the implementation factors identification approach, the study examined to what extent the perceived usefulness of voice mail, individual innovativeness, perceived pressure by supervisors and coworkers to use voice messaging, and the amount of training in voice messaging were associated with the implementation of voice messaging.

The theory of planned behavior (Ajzen, 1989, 1985) was used as a general framework to put the variables of the study into perspective. The theory of planned behavior postulates that performance of a behavior is determined by individuals" intentions to engage in the behavior. The intention to perform (or not perform) the behavior is determined by three conceptually

independent variables: attitudes, subjective norms and perceived behavioral controls. This study examined to what extent attitudes, subjective norms, and perceived behavioral controls together influenced the extent of use of voice messaging. The attitudes that were investigated in this study were individuals' attitudes toward the perceived usefulness of voice mail and individuals' attitudes toward innovation. Subjective norms referred to the extent to which individuals felt pressured by supervisors and coworkers to use voice messaging. Perceived behavioral controls referred, in this study, to the amount of training in voice messaging that individuals have had.

The rest of the chapter is divided into six sections. First, the findings regarding the perceived usefulness of voice mail are discussed. Second, the findings regarding individual innovativeness are discussed. Third, the findings regarding perceived pressure by supervisors and coworkers to use voice messaging are discussed. In the fourth section, the findings regarding training are discussed, followed by the findings with regard to the multiple regression analysis. Finally, the findings regarding the supplementary analyses are discussed.

Perceived Usefulness

Hypothesis 1 stated, "The degree of perceived usefulness of voice mail is positively associated with extent of use of voice messaging." Hypothesis 1 was supported. A Pearson product-moment correlation was computed to test Hypothesis 1. The coefficient of correlation between the perceived usefulness of voice mail and extent of use of voice messaging was .386 indicating that the perceived usefulness of voice messaging explained 15% of the variance in extent of use of voice messaging. This finding is consistent with that reported in the literature regarding the relationship between individuals' attitudes toward the usefulness of information systems and extent of use (Grantham and Vaske, 1985; Davis, 1989; Robey, 1979; Robey and Zeller, 1978).

The perceived usefulness of voice mail contributed more to the variance in extent of use than any of the other variables in the present study. This finding is consistent with that reported by Grantham and Vaske (1985) in a study of the relationship of three categories of predictor variables on the use of voice mail. Of the three categories investigated, the researchers concluded that individuals' attitudes toward the voice mail system were the strongest

predictors of extent of use of voice mail and explained more of the variance than any of the other independent variables.

Likewise, in a study of another computer mediated communication system, electronic mail, Davis (1989) found that the perceived usefulness of the electronic mail system was positively correlated with its extent of use.

Robey and Zeller (1978) found that attitudes of individuals with regard to the perceived usefulness of an information system in improving their performance was a critical and significant factor toward successful implementation. In a study to determine the factors associated with the successful implementation of an information system at one manufacturing plant and the failure of the identical information system at a neighboring plant within the same organization, the researchers found that employees within the plant that accepted the system had more favorable attitudes and perceived the information system to be useful in aiding their performance on the job. In yet another study, an industrial sales force's perceptions of the effect of a computer based information system on job performance was found to be the greatest predictor of extent of use (Robey, 1979).

Individual Innovativeness

Hypothesis 2 stated, "Individual innovativeness is positively associated with extent of use of voice messaging." Hypothesis 2 was supported. Individual innovativeness was found to be positively associated with extent of use of voice messaging. A Pearson product-moment correlation was computed to test Hypothesis 2. The coefficient of correlation between individual innovativeness and extent of use of voice messaging was .246 indicating that individual innovativeness explained 6% of the variance in extent of use of voice messaging.

Innovativeness can be defined as a willingness to change and represents the degree to which individuals are willing to accept change in their work environment (Richmond, et al., 1982). Innovative individuals reported that using voice mail improved their ability to obtain information (Rice and Shook, 1990). Zmud (1984) defined innovativeness as a receptivity toward change and, in a study of factors associated with the use of modern software practices, concluded that receptivity toward change of an organization's members was significantly associated with extent of use.

Attitudes refers to the degree to which individuals evaluate (favorably or unfavorably) the

behavior in question (Ajzen, 1989). In the present study, two attitudes were examined, individuals' attitudes toward the perceived usefulness of voice mail and individuals' attitudes toward change. There was a significant correlation between individual innovativeness and extent of use of voice messaging. But individuals' attitudes toward change (innovativeness) explained far less of the variance in extent of use of voice messaging (6%) than attitudes toward the perceived usefulness of voice mail which accounted for 15% of the variance.

The theory of planned behavior (Ajzen, 1989, 1985) can be used to clarify the reasons for the difference in the relative strengths of these two variables in explaining extent of use. The theory of planned behavior postulates that attitudes toward the behavior in question predict intent to perform the behavior. Positive attitudes toward specific behavior are more likely to predict the behavior than a general pro-innovation attitude (Leonard-Barton and Deschamps, 1988). For example, researchers who attempt to predict the extent of use of a particular software package will be more successful when they examine individuals' specific attitudes toward the software rather than individuals' general attitudes toward computers (Grantham and Vaske, 1985). Positive attitudes toward

the perceived usefulness of voice mail can be expected to be more highly correlated with extent of use of voice messaging than positive attitudes toward innovation.

Perceived Pressure by Supervisors and Coworkers

Hypothesis 3 stated, "The degree of perceived pressure by supervisors to use voice messaging is positively associated with extent of use of voice messaging." Hypothesis 4 stated, "The degree of perceived pressure by coworkers to use voice messaging is positively associated with extent of use of voice messaging." Findings from the study indicated that an overwhelming number of respondents (96.8%) felt no pressure by coworkers to use voice messaging. Almost as many respondents (95.6%) felt no pressure by supervisors to use voice messaging. Perceived pressure by supervisors and coworkers to use voice messaging was measured on a Likert-type scale, ranging from 1 = No extent to 5 = Very great extent. The mean score for both perceived pressure by coworkers to use voice messaging and perceived pressure by supervisors to use voice messaging was 1.1. If independent variables do not have variance, they cannot be used to explain the dependent variable (Kerlinger and Pedhazur, 1973). Due

to the lack of variability in the independent variables, perceived pressure by supervisors and coworkers to use voice messaging, an evaluation of Hypothesis 3 and Hypothesis 4 was precluded.

When examining behavior within organizations, it is important to consider social pressures to perform the behavior (Monge, Cozzens, and Contractor, 1992). Robertson (1989) found that social pressure influenced the extent of use of a word processing package, a presentation graphics package and a project management software package.

Individuals can perceive attitudes, behavior or statements by supervisors and coworkers as pressure even when objective measures do not reinforce this perception. Supervisors have a major influence on the behavior of their subordinates (Rice and Shook, 1990; Nutt, 1986; Huberman and Miles, 1984; Mick, et al., 1980; Robey and Zeller, 1978). Subordinates' behavior is influenced not only by management's actions, but also by individual perceptions of supervisors' attitudes (Mick, et al. 1980). Perceived pressure by supervisors and coworkers to use communication technologies can have the same effect on individual behavior as objective measures of pressure.

For example, Komsky (1991) found that 50% of electronic mail users believed that they were required

to use the electronic mail system as part of their jobs although no job description stated this requirement. She speculated that users may have perceived pressure to use the system because much important information was available only through electronic mail.

Unlike the previous studies where researchers found that individuals perceived social pressure to perform the behavior, respondents in the present study reported feeling almost no social pressure to use voice messaging. Due to this lack of variability, it was not possible to ascertain if an association existed between perceived pressure and extent of use of voice messaging. Social pressure influences individuals' behavior (Robertson, 1989; Ajzen and Madden, 1986). In the present study, individuals perceived almost no pressure to use voice messaging. At the same time, respondents were not extensive users of voice messaging. Though further statistical analyses of Hypotheses 3 and 4 was not warranted due to the lack of variability in perceived pressure, the findings indicated that respondents did not feel social pressure to perform the behavior and did not perform the behavior to a great extent.

Training

Hypothesis 5 stated, "The amount of training in voice messaging is positively associated with extent of use of voice messaging." Hypothesis 5 was supported. The amount of training in voice messaging was found to be positively associated with extent of use of voice messaging. A Pearson product-moment correlation was computed to test Hypothesis 5. The coefficient of correlation between the amount of training in voice messaging and extent of use was .374 indicating that the amount of training in voice messaging explained 14% of the variance in extent of use of voice messaging.

The importance of training in ensuring that information technologies will be used by individuals has been extensively noted in the information systems literature (Bostrom, et al., 1990; Davis and Davis, 1990; Beswick and Reinsch, 1987; Lee, 1986; Fuerst and Cheney, 1982). In a study of eight large organizations, a positive relationship was found to exist both between computer-related training and computer-related ability and between individuals' abilities to use information technologies and their use of them (Nelson, Kattan, and Cheney, 1991).

Not only training, but the amount of training, is an important determinant of use of information

technologies. In the present study, a positive association was found between the amount of training that individuals had received in voice messaging and the amount of use of voice messaging. Fuerst and Cheney (1982) also found that amount of user training was a critical factor in determining the degree to which individuals used an information technology. In an investigation of the factors that affected the degree to which decision makers used a decision support system (DSS), the researchers concluded that given above average training, there is a .75 probability that there will be above-average general use of the DSS. Training was defined as formal classes, training manuals, one-on-one instruction, and hot-lines to answer specific questions.

In a study of personal computer use by two divisions of a large manufacturing plant (Lee, 1986), one division was found to have used computers significantly more than the other division. In the higher use division, individuals learned to use information technologies from coworkers and information systems staff and had significantly more consultations with both their colleagues (50%) and information systems staff (200%) than in the lower use division.

The amount of training in voice messaging contributed almost as much to the variance (14%) in

extent of use of voice messaging as the perceived usefulness of voice mail (15%). The theory of planned behavior postulates that both attitudes toward the behavior as well as individuals' perceptions of behavioral control determine intent to perform the behavior. Individuals may possess positive attitudes toward a behavior but if they lack the skills or abilities to perform the behavior, they will perceive a lack of control over the behavior. The present study examined the association between an attitude toward the behavior (perceived usefulness) and a perceived behavioral control (amount of training). Each of these independent variables contributed significantly toward the behavior, extent of use of voice messaging.

Effect of Variables Combined

Hypothesis 6 stated, "The degree of perceived usefulness of voice mail, individual innovativeness, and the amount of training in voice messaging combined explain more of the variability in extent of use of voice messaging than any of these variables alone." Hypothesis 6 was supported.

More than a quarter (27%) of the variance in extent of use of voice messaging was explained by a combination of the three independent variables,

perceived usefulness of voice messaging, individual innovativeness, and amount of training. The results of the multiple regression analysis were similar to those of the zero-order Pearson. Perceived usefulness contributed the most toward the variance in extent of use of voice messaging, followed by amount of training and individual innovativeness. All three independent variables were shown to make a unique contribution to the variance in extent of use of voice messaging.

According to the theory of planned behavior, the more favorable the attitude and subjective norm with respect to a behavior, and the greater the perceived behavioral control, the stronger the likelihood of intent to perform the behavior (Ajzen, 1989, 1985). The three determinants of intentions to perform behavior, (attitudes, subjective norms, perceived behavioral controls), combined are positively associated with the behavior. In the present study, the relationship between perceived pressure by supervisors and coworkers to use voice messaging and extent of use of voice messaging could not be examined due to a lack of variability. An overwhelming number of respondents (96.8%) indicated that they felt no pressure by coworkers to use voice messaging. Almost as many respondents (95.6%) felt no pressure by supervisors to use voice messaging. Further

statistical analyses of these variables was not warranted and therefore they were not entered into the multiple regression analysis.

Consistent with the theory of planned behavior, the remaining independent variables in this study (perceived usefulness of voice mail, individual innovativeness, and amount of training in voice messaging) combined explained more of the variance in extent of use of voice messaging than any of the variables alone. The perceived usefulness of voice messaging alone explained 15% of the variance in extent of use, while the amount of training in voice messaging alone explained 14% of the variance in extent of use. Individual innovativeness, by itself, explained 6% of the variance in extent of use. Therefore, the variance explained by the three variables combined (27%) was 12% more than the effect of any of the variables by themselves.

Supplementary Analyses

One-way analysis of variance and Tukey-HSD procedures described meaningful differences among the mean scores of two major study variables for groups who differed by the amount of time spent using voice mail. Meaningful differences were found among the mean scores

of individual innovativeness and extent of use of voice messaging. Respondents who had been using voice mail for three years or more had a higher mean score on the Innovativeness Scale than respondents who had been using voice mail for less than three years.

Researchers have defined and measured individual innovativeness in two ways. Innovativeness has been defined as the "relative earliness or lateness that an individual adopts an innovation compared to other members of the social system" (Brancheau and Wetherbe, 1990, p. 119). According to this perspective, not all members of a social system will adopt an innovation at the same time (Rogers, 1983). Those individuals who begin to use information technologies relatively earlier are considered to be more innovative than those who begin using the technologies later.

Individual innovativeness has also been defined as a willingness to change and represents the degree to which individuals are willing to accept change in their work environment (Richmond, et al., 1982). According to this perspective, those individuals who have a more positive attitude toward change will use technologies to a greater extent. This construct was used in the present study.

In addition to being asked about their attitude toward innovation, respondents were also asked to

indicate how long they had been using voice mail. Mean scores on the Innovativeness Scale, (Hurt, Joseph and Cook, 1977), were analyzed by the amount of time individuals had been using voice mail. The mean score on the Innovativeness Scale for respondents who had been using voice mail for three years or more (43.9) was considerably higher (more than half the average standard deviation) than for those who had been using voice mail for less than three years. This finding appears to give construct validity to the Innovativeness Scale and indicates a relationship between the two constructs of innovativeness.

A meaningful difference was also found among the mean scores of extent of use of voice messaging for groups who differed by the amount of time spent using voice mail. Respondents with greater prior experience using voice mail had a higher mean score on extent of use of voice messaging. Respondents who had been using voice mail for one to three years had a higher mean score on extent of use of voice messaging than those who had been using it less than a year. Respondents who had been using voice mail for more than three years had the highest overall mean score for extent of use of voice messaging.

The relationship between prior experience and extent of use of information technologies has been

reported in the literature (DeLone, 1988; Lee, 1986; Grantham and Vaske, 1985) with inconsistent results.

For example, in a study that investigated the factors that affected the use of information systems, DeLone (1988) found that the length of time subjects had been using computers was not associated with the extent to which they used the technologies. The researcher concluded that organizations should not assume that the mere passage of time is sufficient to guarantee the successful use of computers.

Lee (1986), however, found that individuals with stronger computer backgrounds used computers to a greater extent than individuals with weaker backgrounds. Grantham and Vaske (1985) reported that the length of time respondents had been using voice mail was positively correlated with present usage. These researchers concluded that more frequent voice mail users had more prior experience with the voice mail system.

In the present study, respondents' mean scores for extent of use of voice messaging were analyzed for groups who differed by the amount of time spent using voice mail. A meaningful difference in mean scores was found between all three categories. The mean extent of use of voice messaging score for respondents who had been using voice mail for less than a year was 14.5,

while the mean score for those who had been using voice mail for one to three years was 19.8. Respondents who had been using voice mail for more than three years had the highest overall mean score (23.7) for extent of use of voice messaging. The difference between the means in each category was greater than their average standard deviations. The mean score for all respondents on extent of use of voice messaging was 19.2. Mean scores for individuals who had been using voice mail for less than a year (14.5) were considerably lower than the average mean score for all respondents. Mean scores for individuals who had been using voice mail for one to three years (19.8) were comparable to the average mean score for all respondents while mean scores for individuals who had been using voice mail for three years or more (23.7) were considerably higher than the average mean score for all respondents. These findings indicate that individuals with greater prior experience using voice mail use voice messaging to a greater extent than those with less experience.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Implementation research tries to explain what factors lead to successful implementation so that technologies can be used to their fullest potentials. The purpose of this study was to examine the extent to which perceived usefulness of voice mail, individual innovativeness, perceived pressure by supervisors and coworkers, and amount of training in voice messaging explained the extent of use of voice messaging.

The implementation factor identification approach was used to identify the variables for this study. The implementation factor paradigm is based on determining which factors (or independent variables) are associated with the successful implementation (or the dependent variable, use) of information technologies. The emphasis is on explaining implementation success.

This study used the theory of planned behavior (Ajzen, 1989, 1985) as a general framework to put the variables of the study into perspective. The theory of planned behavior was designed to predict behavior

across many settings. This theory postulates that an individual's performance of a behavior is determined by the intention to perform (or not perform) the behavior. According to the theory, there are three conceptually independent determinants of intentions to perform behavior: attitudes, subjective norms and perceived behavioral controls.

The theory of planned behavior was useful since this study examined to what extent attitudes, subjective norms, and perceived behavioral controls together explained the extent of use of voice messaging. The attitudes that were investigated in this study were individuals' attitudes toward the perceived usefulness of voice mail and individuals' attitudes toward innovation. Subjective norms, in this study, referred to the extent to which individuals felt pressured by supervisors and coworkers to use voice messaging. Perceived behavioral controls, in this study, referred to the amount of training in voice messaging that individuals have had.

Perceived usefulness has been defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320). Individuals tend to use information technologies to the extent that they believe it will be useful to them personally or in

their jobs (Komsky, 1991). A number of researchers have concluded that individuals' attitudes toward the usefulness of an information system are positively associated with its extent of use (Davis, 1989; Grantham and Vaske, 1985; Zmud, 1979; Robey, 1979; Robey and Zeller, 1979).

Not all individuals within an organization will implement information technologies to the same degree. Innovativeness can be defined as a willingness to change and represents the degree to which individuals are willing to accept change in their work environment (Richmond, et al., 1982). In any organization, some individuals will have a more positive attitude toward change and a greater willingness to implement new ways of doing things. Innovative individuals are more eager to try new ideas, have more favorable attitudes toward change, are less dogmatic, and are more able to cope with uncertainty and ambiguity (Brancheau and Wetherbe, 1990; Rogers, 1983).

For individuals within an organization to benefit fully from communication technologies, they may have to pressure their coworkers and subordinates to use these technologies (Fulk, et al., 1990; Markus, 1987). This pressure does not have to be overt in order to wield considerable behavioral force (Bettenhausen and Murnighan, 1991). Informal rules can "emerge within

organizations, work groups, or among peers which subsequently have a strong influence over individual behavior" (Culnan and Bair, 1983, p. 217).

Individuals can perceive attitudes, behaviors or statements by supervisors and coworkers as pressure even when objective measures do not reinforce this perception. Supervisors have a major influence on the behavior of their subordinates (Rice and Shook, 1990; Nutt, 1986; Huberman and Miles, 1984; Mick, et al., 1980; Robey and Zeller, 1978). Subordinates' behavior is influenced not only by management's actions but also by individual perceptions of supervisors' attitudes (Mick, et al., 1980). Perceived pressure by supervisors and coworkers to use communication technologies can have the same effect on individual behavior as objective measures of pressure.

For users to implement information technologies, they must first learn how to use them. Training enables individuals to learn new skills and concepts which will help them to perform their jobs more effectively (Regan and O'Connor, 1989). The importance of training in ensuring that information technologies will be used by individuals has been extensively noted in the information systems literature (Nelson, Kattan, and Cheney, 1991; Beswick and Reinsch, 1987; Manross and Rice, 1986).

The researcher examined to what extent perceived usefulness, perceived pressure by supervisors and coworkers, individual innovativeness and amount of training influenced the extent of use of voice messaging. A mail survey was sent to 285 voice mail users who worked in the corporate office of a Fortune 500 organization. Fourteen questionnaires were returned marked "no longer working here". Of the 162 questionnaires returned by respondents, one questionnaire was incomplete and had to be discarded, resulting in a 59% response rate. A questionnaire consisting of two instruments, the Innovativeness Scale and the Voice Mail Questionnaire, was used to collect the data for the study.

The Innovativeness Scale, developed by Hurt, Joseph, and Cook, (1977), measured the individual innovativeness of respondents. The Innovativeness Scale asks individuals about their attitude toward innovation. Responses were measured on a Likert-type scale, ranging from 1 = Strongly disagree to 5 = Strongly agree.

The researcher-developed Voice Mail Questionnaire was composed of five sections. Section I measured the perception of respondents regarding the usefulness of voice mail. Responses were measured on a Likert type scale, ranging from 1 = Strongly disagree to 5 =

Strongly agree. Section III measured the amount of training in voice messaging. Amount of training in voice messaging was measured by a checklist, where respondents were asked to indicate for each of the four features of voice messaging, whether or not they had been trained in the use of that feature, with 1 = No training and 2 = Training. Section IV and V, respectively, measured the perceived pressure by supervisors and coworkers, that respondents have felt, or presently feel, to use voice messaging. Responses were measured on a Likert-type scale, ranging from 1 = No extent to 5 = Very great extent. Section VI measured the extent of use of voice messaging by respondents. Responses were measured on a Likert-type scale, ranging from 1 = No extent to 5 = Very great extent. Section VII contained demographic information which was used to provide a description of the sample.

Pearson product-moment correlations were computed to examine the relationship between each independent variable (perceived usefulness of voice mail, individual innovativeness, amount of training in voice messaging) and the dependent variable (extent of use of voice messaging. Multiple regression analysis was conducted to explain the variance in the dependent variable, extent of use of voice messaging, on the basis of the independent variables, perceived

usefulness, individual innovativeness, and amount of training. Supplementary analyses were performed to determine if differences existed among the mean scores for the major study variables by the amount of time spent using voice mail. One-way analysis of variance and Tukey-HSD procedures were used to describe significant differences.

An overwhelming number of respondents (96.8%) indicated that they felt no pressure by coworkers to use voice messaging. Almost as many respondents (95.6%) felt no pressure by supervisors to use voice messaging. When independent variables do not have variance, they cannot be used to explain the dependent variable (Kerlinger and Pedhazur, 1973). Due to this lack of variability, an evaluation of the two hypotheses related to perceived pressure by supervisors and coworkers, Hypothesis 3 and Hypothesis 4, was precluded and further statistical analyses of these hypotheses was not warranted. Pearson product-moment correlations were computed to test Hypothesis 1, Hypothesis 2, and Hypothesis 5. Multiple regression analysis was conducted to test Hypothesis 6. All hypotheses that were tested were supported.

A positive association was found between the independent variables perceived usefulness of voice mail, individual innovativeness, amount of training in

voice messaging and the dependent variable, extent of use of voice messaging. Fifteen percent of the variance in extent of use of voice messaging was attributed to the perceived usefulness of voice mail. Six percent of the variance in extent of use of voice messaging was attributed to individual innovativeness. Fourteen percent of the variance in extent of use of voice messaging was attributed to the amount of training in voice messaging. Because of the lack of pressure by supervisors and coworkers to use voice messaging, it was not possible to ascertain if an association existed between perceived pressure by supervisors and coworkers to use voice messaging and extent of use of voice messaging.

The perceived usefulness of voice mail, individual innovativeness, and amount of training in voice messaging combined explained more of the variance in extent of use of voice messaging than any of these variables alone. Together, these combined variables explained 27% of the variance in extent of use of voice messaging. Perceived usefulness contributed the most toward the variance in extent of use of voice messaging, followed by amount of training and individual innovativeness. All three independent variables were shown to make a unique contribution to the variance in extent of use of voice messaging.

One-way analysis of variance and Tukey-HSD procedures described meaningful differences among the mean scores of two major study variables for groups who differed by the amount of time spent using voice mail. Meaningful differences were found among the mean scores of individual innovativeness and extent of use of voice messaging. Respondents who had been using voice mail for three years or more had a higher mean score on the Innovativeness Scale than respondents who had been using voice mail for less than three years. Respondents with greater prior experience using voice mail had a higher mean score on extent of use of voice messaging. Respondents who had been using voice mail for one to three years had a higher mean score on extent of use of voice messaging than those who had been using it less than a year. Respondents who had been using voice mail for more than three years had the highest overall mean score for extent of use of voice messaging.

Conclusions

Based on the findings in this study, the following conclusions are drawn.

Perceived Usefulness

Hypothesis 1 stated, "The degree of perceived usefulness of voice mail is positively associated with extent of use of voice messaging." Hypothesis 1 was supported. A positive association was found between the perceived usefulness of voice mail and respondents' use of voice messaging. It appears that individuals who perceive an information technology to be useful to them will become advanced users of the technology.

The perceived usefulness of voice mail contributed more to the variance in extent of use than any of the other variables in the present study, explaining 15% of the variance. Although individuals' attitudes toward the perceived usefulness of a technology may be only one factor in the decision to use a technology, the data suggests that it is a significant and critical factor in ensuring successful implementation.

Individual Innovativeness

Hypothesis 2 stated, "Individual innovativeness is positively associated with extent of use of voice messaging." Hypothesis 2 was supported. Individual innovativeness was found to be positively associated with extent of use of voice messaging. Therefore, it

appears that individuals who have a more positive attitude toward change and a greater willingness to implement new ways of doing things will use advanced features of information technologies to a greater extent than those individuals who have a less positive attitude toward change.

Both Hypothesis 1 and Hypothesis 2 examined the relationship between attitudes (toward the perceived usefulness of voice mail and toward change) and extent of use of voice messaging and both hypotheses were supported. These attitudes were significantly correlated with extent of use of voice messaging. It appears that attitudes are a significant correlate of behavior.

Respondents' attitudes toward the perceived usefulness of voice mail explained more of the variance in extent of use of voice messaging than their attitudes toward change. It appears that specific attitudes toward behavior are more highly correlated with the behavior than general, pro-innovativeness attitudes.

Pressure by Supervisors and Coworkers

An overwhelming number of respondents (96.8%) indicated that they felt no pressure by coworkers to

use voice messaging. Almost as many respondents (95.6%) felt no pressure by supervisors to use voice messaging.

Although the relationship between perceived pressure and extent of use could not be examined due to the lack of variability, an examination of respondents' extent of use of voice messaging may clarify the effect of this lack of pressure. The mean score on extent of use of voice messaging was 1.9, out of a possible range of one to five. This finding indicates that respondents, generally, were not extensive users of voice messaging.

According to the literature (Robertson, 1989; Ajzen and Madden, 1986), social pressure influences use. In the present study, respondents reported feeling almost no pressure to use voice messaging. There was almost no perceived pressure by supervisors and coworkers to use voice messaging and there was also little use of voice messaging. Perhaps if there had been greater pressure by supervisors and coworkers to use the advanced features of voice mail, respondents' use of the technology might have been more extensive.

Training

Hypothesis 5 stated, "The amount of training in

voice messaging is positively associated with extent of use of voice messaging." Hypothesis 5 was supported. The amount of training in voice messaging was found to be positively associated with extent of use of voice messaging. The data suggests that the amount of training in an information technology is a critical factor in successful implementation.

Although amount of training was positively correlated with extent of use, the mean score on amount of training, 5.9 out of a possible range of four to eight, indicated that respondents generally did not have much training in voice messaging. As discussed in the previous section, respondents were not extensive users of voice messaging. It is possible that one of the reasons respondents did not use the advanced features of the technology to a greater extent was the small amount of training. If respondents had a greater amount of training in the technology, they might have become more extensive users.

Effect of Variables Combined

Hypothesis 6 stated, "The degree of perceived usefulness of voice mail, individual innovativeness, and the amount of training in voice messaging combined explain more of the variability in extent of use of

voice messaging than any of these variables alone." Hypothesis 6 was supported. More than a quarter of the variance in extent of use of voice messaging was explained by a combination of the three independent variables, perceived usefulness of voice messaging, individual innovativeness, and amount of training. All three independent variables were shown to make a unique contribution to the variance in extent of use of voice messaging. Perceived usefulness of voice messaging, individual innovativeness, and amount of training together explained more of the variance in use than any of these variables alone. Therefore, it appears that a combination of factors together will contribute more toward the successful implementation of an innovation than any of the factors alone.

Supplementary Analysis

The mean score on the Innovativeness Scale for respondents who had been using voice mail for three years or more was considerably higher (more than half the average standard deviation) than for those who had been using voice mail for less than three years. Individuals who begin to use information technologies relatively earlier are considered to be more innovative than those who begin using the technologies later

(Brancheau and Wetherbe, 1990). Individual innovativeness has also been defined as a willingness to change and represents the degree to which individuals are willing to accept change in their work environment (Richmond, et al., 1982). Based on the results in the present study, it appears that individuals who have a more positive attitude toward innovation will adopt an information technology relatively earlier compared to other individuals within the organization.

A meaningful difference was also found, in the present study, among the mean scores of extent of use of voice messaging for groups who differed by the amount of time spent using voice mail. Individuals who had been using voice mail for less than a year used voice messaging to a considerably less extent than the average use for all respondents. Mean scores on extent of use of voice messaging for individuals who had been using voice mail for one to three years were comparable to the average mean score for all respondents while mean scores on extent of use of voice messaging for individuals who had been using voice mail for three years or more were considerably higher than the average mean score for all respondents. Therefore, it can be concluded that individuals with greater prior experience using a technology use advanced features of

the technology to a greater extent than those who have had less experience with the technology.

Recommendations for Practice

The perceived usefulness of an information technology was found to be a critical factor in implementation. Therefore, it is recommended that management make clear to individuals within the organization the advantages of the new technologies. Individuals should be instructed not only in how to use the technology but also in the various applications in which the technology can be useful.

The results of this study indicated that individuals who had a positive attitude toward change used advanced features of voice mail to a greater extent than individuals who had a less positive attitude toward change. Innovative individuals could encourage their colleagues who are less willing to implement new ways of doing things to begin to use the advanced features of the new technologies.

The results of this study indicated that specific attitudes toward behavior are more important in determining behavior than general attitudes. It is recommended that organizations involved in the implementation of new technologies determine, at an

early stage, what the attitudes of individuals within the organization are toward the new technologies and work with users to involve them in the implementation effort.

Management would be advised not to assume that if individuals are using an information technology, they are using it to its fullest potential. To ensure full implementation, management could periodically ascertain to what extent the technology is being used and should develop a strategy to ensure its use.

It is recommended that individuals be encouraged to learn to use the advanced features of the technology. Advanced features can be learned not only through formal training classes, but also from coworkers and documentation. Therefore, management would be advised to make sure that clear and easy to use documentation is readily available and widely distributed.

Recommendations for Future Research

The findings of this study provide an understanding of the factors affecting the implementation of the advanced features of a computer-mediated communication system. Following are recommendations for future study.

To get a more complete view of how technology is integrated into the workplace requires a study of an organization over time. The present study was delimited to one organization in one particular year, 1992. Of the total number of respondents, 69% were professional workers, while only 13.8% were clerical workers. This study can be replicated in the same organization, in five years, and then again in ten years, to identify if the advanced use of the technology by workers in each category changes over time and if the overall use of advanced features increases.

Voice mail is one example of computer-mediated communication systems. Another example of a computer-mediated communication system is electronic mail. With both voice mail and electronic mail, users can communicate asynchronously and send messages via group distribution lists. But electronic mail is text-based while voice mail is orally-based. It is recommended that researchers examine whether there is a correlation between use of voice mail and electronic mail. Do individuals who are extensive users of voice mail also use electronic mail to a great extent or is there a negative correlation between the two technologies?

Telephone companies have been offering home voice mail systems since the early 1990's. The results of

the present study indicated that individuals with greater prior experience using voice mail used the advanced features of voice messaging to a greater extent than individuals with less experience using voice mail. It is recommended that researchers investigate whether there is a correlation between home use of voice mail and use of voice mail in the workplace.

Results of the present study indicated that respondents were not extensive users of voice messaging. This may have been due to their resistance to change. For example, individuals may feel apprehensive and uncomfortable when talking to a machine, and this may account for a reluctance to use voice messaging. Likewise, individuals may feel uncomfortable with computers, and have a negative attitude toward their use. It is recommended that researchers investigate user resistance and its effect on the use of advanced features of emerging information technologies, such as multimedia.

Results of the present study indicated that individuals with greater prior experience using voice mail used the advanced features of voice messaging to a greater extent than individuals with less experience using voice mail. It is recommended that researchers investigate whether there is a correlation between the

use of advanced features of one technology with the use of advanced features of other technologies.

Results of the study indicated that the higher the score on the Innovativeness Scale, the more extensive the use of voice messaging. It is recommended that researchers investigate if there is a correlation between innovativeness and learning to use advanced features of a technology on one's own, through self-instruction, rather than through formal training classes or from coworkers. Furthermore, it is recommended that researchers examine if innovative individuals are more likely to be agents of change than less innovative individuals.

Amount of training was found to be positively associated with extent of use. It is recommended that researchers examine if there is an association between the source of training and extent of use. Do users learn to use advanced features of a technology primarily from formal classes, on their own, or from coworkers?

In the present study, respondents reported feeling almost no pressure by supervisors or coworkers to use voice messaging. It is recommended that researchers examine to what extent individuals perceive pressure to use advanced features of other information technologies.

The subjects participating in this study were delimited to those individuals who worked in the corporate office of a major Fortune 500 corporation. It is recommended that this study be replicated among a number of different organizations to ascertain whether there actually is pressure to use voice messaging, and if so, what effect this pressure has on the extent of use of voice messaging.

The asynchronous nature of computer-mediated communication systems means that individuals do not have to be available at the same time to exchange quality information. This is especially important as the business environment becomes, more and more, an international one. It is recommended that researchers examine the extent of use of computer-mediated communication systems in a global environment.

Information technology implementation research has generally focused on the technology as a total entity rather than differentiating between basic and advanced features. In the present study, implementation was measured by multi-item scale that examined extent of use of the more sophisticated features of voice mail. Results indicated that respondents, generally, were not extensive users of these advanced features. It is suggested that the use of advanced features be explored in future technology implementation research.

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APPENDIX A
COVER LETTER

You can play a major role in helping organizations, and individuals like yourself, learn more about the factors that promote the use of voice mail for voice messaging rather than simply for call answering.

Could you please complete the enclosed questionnaire? Your participation, of course, is voluntary, and your responses are completely anonymous. You may withdraw from this study at any time without consequences. The completion of my research, which is part of the requirements for my Ph.D. dissertation at New York University, depends on your cooperation, without which this study could not progress.

No identification number appears on the questionnaire. This guarantees your complete anonymity. A postcard is included for the following reasons:

1. To afford you an opportunity to request a copy of the survey results.
2. To serve as an acknowledgment that you have completed and mailed the questionnaire under separate cover.

3. To avoid the need of mailing follow-up requests to respondents.

Your time is important to you. This survey should only take 15 minutes or less to complete. Please return the enclosed questionnaire before _____ in the return envelope provided. Please return the enclosed postcard separately from the questionnaire. Your prompt response is very much appreciated.

If you have any questions, please call me at (516) 244-3265. Thank you very much for your participation in this study.

Sincerely,

Carol Okolica

APPENDIX B
QUESTIONNAIRE

SECTION I

This section asks about the usefulness of voice mail as you perceive it.

Please mark the extent to which you agree, or disagree, with each of the following statements.

(1) Strongly disagree
(2) Disagree
(3) Not sure
(4) Agree
(5) Strongly agree

1.	Using voice mail enhances my effectiveness on the job.	1	2	3	4	5
2.	Voice mail speeds up the decision making process.	1	2	3	4	5
3.	Voice mail improves the effective coordination of activities.	1	2	3	4	5
4.	Voice mail enables me to use my time more efficiently when I'm away from the office.	1	2	3	4	5
5.	Using voice mail makes it easier to do my job.	1	2	3	4	5
6.	Using voice mail increases my productivity.	1	2	3	4	5
7.	Overall cost savings result from my use of voice mail.	1	2	3	4	5

SECTION II

This section asks about your attitude toward innovation.

Please mark the extent to which you agree, or disagree, with each of the following statements.	(1) Strongly disagree (2) Disagree (3) Not sure (4) Agree (5) Strongly agree

8.	I am generally cautious about accepting new ideas.	1	2	3	4	5
9.	I rarely trust new ideas unless I can see whether the vast majority of people around me accept them.	1	2	3	4	5
10.	I am aware that I am usually one of the last people in my group to accept something new.	1	2	3	4	5
11.	I am reluctant about adopting new ways of doing things until I see them working for people around me.	1	2	3	4	5
12.	I find it stimulating to be original in my thinking and behavior.	1	2	3	4	5
13.	I tend to think that the old way of living and doing things is the best way.	1	2	3	4	5
14.	I am challenged by ambiguities and unsolved problems.	1	2	3	4	5
15.	I must see other people using new innovations before I will consider them.	1	2	3	4	5
16.	I am challenged by unanswered questions.	1	2	3	4	5
17.	I often find myself skeptical of new ideas.	1	2	3	4	5

SECTION III

This section asks about the training you received in voice messaging.

Please mark the primary way in which you learned to use the following features of voice messaging.	(1) Was not trained to use this feature. (2) From an individual assigned by the organization to train you. - telecommunication person - formal training classes. (3) From coworkers. (4) On your own, using written documentation and/or voice mail prompts.				
18. Sending a message directly to a voice mail box. i.e. without first trying to reach the person at their phone.		1	2	3	4
19. Adding your own comments to a message from someone else and forwarding both to a third person.		1	2	3	4
20. Creating a group distribution list.		1	2	3	4
21. Marking a message for future delivery.		1	2	3	4

SECTION IV

This section asks to what extent you have felt, or presently feel, pressured by your supervisor to use different features of voice messaging.

Please mark the number that best indicates to what extent you have felt, or presently feel, pressured by your supervisor to	(1) No extent (2) Little extent (3) Moderate extent (4) Great extent (5) Very great extent

22.	Send a message directly to a voice mail box i.e. without first trying to reach the person at their phone.	1	2	3	4	5
23.	Adding your own comments to a message from someone else and forwarding both to a third person.	1	2	3	4	5
24.	Use group distribution lists.	1	2	3	4	5
25.	Mark a message for future delivery.	1	2	3	4	5

SECTION V

This section asks to what extent you have felt, or presently feel, pressured by your coworkers to use different features of voice messaging.

Please mark the number that best indicates to what extent you have felt, or presently feel, pressured by your supervisor to	(1) No extent (2) Little extent (3) Moderate extent (4) Great extent (5) Very great extent				
22. Send a message directly to a voice mail box i.e. without first trying to reach the person at their phone.	1	2	3	4	5
23. Adding your own comments to a message from someone else and forwarding both to a third person.	1	2	3	4	5
24. Use group distribution lists.	1	2	3	4	5
25. Mark a message for future delivery.	1	2	3	4	5

SECTION VI

This section asks about your use of voice messaging.

Please mark the number that best indicates to what extent you use voice messaging (not call answering) to	(1) No extent (2) Little extent (3) Moderate extent (4) Great extent (5) Very great extent				
30. Send a message directly to a voice mail box i.e. without first trying to reach the person at their phone.	1	2	3	4	5
31. Add your own comments to a message from someone else and forward both to a third person.	1	2	3	4	5
32. Create a group distribution list.	1	2	3	4	5
33. Mark a message for future delivery.	1	2	3	4	5
34. Delegate tasks.	1	2	3	4	5
35. Coordinate activities.	1	2	3	4	5
36. Report on tasks.	1	2	3	4	5
37. Plan agendas.	1	2	3	4	5
38. Generate ideas.	1	2	3	4	5
39. Send a message via a group list.	1	2	3	4	5

SECTION VII

This section asks some general questions about your background. Please circle the appropriate number.

40. How long have you been using voice mail?
    1 Less than a year
    2 One to three years
    3 Three to five years
    4 More than five years

41. Are you a manager?
    1 Yes
    2 No

42. What type of job do you do?
    1 Professional
    2 Technical
    3 Sales or marketing
    4 Administrative
    5 Secretarial or Clerical
    6 Other: _____

43. How long have you held this position?
    1 Less than a year
    2 One to five years
    3 Five to ten years
    4 More than ten years

44. What is your age?
    1 Less than 30 years
    2 30 to 39
    3 40 to 49
    4 50 to 59
    5 60 years or more

45. What is your highest level of formal education?
    1 Some high school
    2 High school diploma
    3 Some college
    4 Two-year college degree
    5 Four-year college degree
    6 Graduate degree

46. What is your gender?
    1 Female
    2 Male

APPENDIX C
FOLLOW-UP LETTER

About three weeks ago, you received a questionnaire designed to learn more about the factors that promote the use of voice mail for voice messaging rather than simply for call answering. Your opinions are very important to the successful completion of this research project.

If you have not yet responded, please do so as soon as possible. Your participation, of course, is voluntary. No identification number appears on the questionnaire guaranteeing your complete anonymity. You may withdraw from this study at any time without consequences. In the event that your questionnaire has been misplaced, a replacement is enclosed.

Your time is important to you. This survey should take approximately 15 minutes to complete. Please return the completed questionnaire in the return envelope provided by _____.

If you have any questions, please call me at (516) 244-3265. Thank you in advance for your participation and prompt response.

Sincerely,

Carol Okolica