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ATTITUDES OF OFFICE PERSONNEL TOWARD SELECTED ISSUES CONCERNING THE USE OF ADVANCED OFFICE TECHNOLOGY

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ROBERT SCOTT KRIEBEL

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ATTITUDES OF OFFICE PERSONNEL TOWARD SELECTED ISSUES CONCERNING THE USE OF ADVANCED OFFICE TECHNOLOGY

By

Robert Scott Kriebel

A DISSERTATION

Submitted to
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ABSTRACT

ATTITUDES OF OFFICE PERSONNEL TOWARD SELECTED ISSUES CONCERNING THE USE OF ADVANCED OFFICE TECHNOLOGY

By

Robert Scott Kriebel

The researcher's purposes in this descriptive study were (a) to analyze the attitudes of five classifications of office personnel toward specific issues concerning the use of advanced office technology (AOT); (b) to determine whether selected demographic, work-related, and AOT-related factors were related to subjects' attitudes toward AOT; and (c) to ascertain whether subjects in the five job classifications differed in their attitudes toward AOT. The study was a replication of one conducted by Kizzier in 1985.

The sample included 360 general office workers, professional secretaries/administrative assistants, systems analysts, first-line managers/supervisors, and middle managers from six departments of state government in West Virginia. Data were gathered through the use of a 7-point Likert attitude scale and a demographic data sheet developed by Kizzier. Major findings were as follows:

Middle managers had the most positive attitude toward AOT, followed closely by first-line managers/supervisors. Next were systems analysts, general office workers, and professional secretaries/administrative assistants, in that order. Respondents hoped

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that AOT would decrease the length of the average work week by 1995. Many thought the number of AOT-related crimes would increase in the next five years, and worried about others having access to information about them that was stored on AOT equipment.

Most respondents would like to have a computer in their homes as well as their offices and hoped that the amount of AOT equipment being used in offices would increase significantly by 1995. They looked forward to learning new skills that would help them use AOT.

Respondents thought that AOT increases the quality of office work and that AOT is significantly increasing the productivity of office managers and/or supervisors. They were concerned that if they do not learn how to use the new AOT equipment, they might lose promotional opportunities. They agreed that AOT is increasing promotional opportunities for middle managers and increases job pressure for office personnel. They hoped that AOT would eliminate more than 50% percent of all routine office tasks by 1995.

Significant relationships were found between (a) age, socio-economic background, and career aspirations and attitudes of office personnel toward AOT issues; (b) attitudes toward AOT and salary equity and industry type; and (c) attitudes toward AOT and AOT knowledge.

Dissertation chair: Dr. Peggy Riethmiller

To my wife, Patricia, and my son, Scott, for their steadfast love, support, and encouragement.

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Most of all, I am thankful to my wife, Patricia, and my son, Scott, for their love, support, understanding, and encouragement.

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LIS

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CHAPTER I

INTRODUCTION TO THE STUDY

Background

American business offices are undergoing a technological revolution, which is changing the methods and procedures used in businesses throughout the nation. Pake ("The Office of the Future," 1988) predicted the effect that modern technology would have on business offices:

> There is absolutely no question that there will be a revolution in the office over the next 20 years. What we are doing will change the office like the jet plane revolutionized travel and the way that TV has altered family life. (p. 49).

Mills ("The Office of the Future," 1988) also predicted that change would take place in business offices because "this [office] technology, heralded as the wave of the future, promises to be bigger than data processing within ten years" (p. 53).

In the field of advanced office technology, there is little consensus about what constitutes office automation. According to Kleinshrod (1983), office automation is an arrangement of technology that helps businesses use and move information more effectively. It is an evolving business phenomenon, with origins in data and word processing, that has spread into personal computing, networking, and other professional uses of electronic systems.

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Changes in business operations are expected to encompass all functions involved in the processing and communication of information. Not only will the production or typing function be automated, but other functions will be automated as well. This development in office automation, namely, the direct use of automation by managers as well as secretarial and clerical support personnel, was described by Dickinson ("Office of the Future," 1988) in this way:

> Office automation is the use of technology, methodology, and procedures, coupled with understanding of human factors to increase the efficiency and effectiveness of the office workers. It takes form in two ways--automation of routine tasks that improve the quality of service to principals in the office, and by providing automation tools to augment the capabilities of the principals. (p. 55)

Lippin (1980) explained that "this range of technology includes dictation equipment, word processing and text editing systems, information storage and retrieval systems, and distribution technology (telecommunications, facsimile, and electronic mail)" (p. 32). Technology is a powerful agent of change, affecting organizational structures and individual ways of working, altering society and the world at large (Kleinshrod, 1983).

Technology is the most tangible manifestation of office automation. Therefore, technology has been given the most attention in lectures and writings in the field of office automation. There is little disagreement about the functions, speeds, and capacities of hardware and software; these features can be demonstrated and described. However, the *inability* of many personnel to use these

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products to perform certain tasks with ease causes problems in training.

Smith (1987) stated that the office has changed more since 1980 than it did in the 100 years before 1980. This change, which resulted from an effort to increase productivity and improve efficiency of the typing function in the office, now involves almost all office functions and includes the use of visual display text editors, magnetic media dictation devices, electronic mail devices, photo composition equipment, and automated record filing systems; new types of technology are being introduced almost daily. The introduction of sophisticated equipment in business offices has necessitated changes in the processing of information from start to finish. Consequently, the automated "office of the future" is no longer a slogan for things to come; it is a present reality.

Office workers at every level of the organization must cope with changes in office functions in various ways. One example of such a change is the demand for increased managerial productivity. Day (1989) said, "Until now, the whole thrust of office technology has been to try to optimize productivity of secretarial and clerical staff. Little effort has been made to use it to help perform managerial tasks" (p. 49).

Cecil (1986) maintained that information processing is the basis of office automation:

> Word, or information, processing, an efficient system of communication one person's ideas in the form of words to another person, is the nucleus of a new technological revolution taking place within offices everywhere. (p. 2)

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The International Information/Word-Processing Association (cited in Cecil, 1986) provided a similar definition of information processing: "The transition of a written, verbal, or recorded word in verbal, typewritten, or printed form and distributed for its ultimate use" (p. 22). The preceding definitions indicate that all aspects of office work are included in the processing of information and that automation has pervaded all areas of the business office.

Statement of the Problem

Research conducted on the subject of office automation has dealt mainly with the effect of automation on support personnel, namely correspondence and administrative secretaries and their immediate supervisors. Several researchers (Allred, 1988; Kizzier, 1986; Moody, 1988; Powell, 1987; Reiff, 1986) sought to determine the educational needs of secretaries with regard to automation. Casady (1973) investigated the job satisfaction of magnetic typewriter operators, and Benjamin (1986) investigated the job satisfaction of correspondence and administrative secretaries. Kutie (1987) analyzed the job dimensions and job satisfaction of secretaries, and Murranka (1986) investigated task inventories and position analyses for correspondence secretaries, administrative secretaries, and word-processing supervisors. However, whereas the above-mentioned studies focused on the effects of automation on support personnel, little research has been done on the attitudes of managerial personnel toward advanced office technology. The present study was undertaken to address that problem. Specifically, this

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study was undertaken to contribute to the body of knowledge related to workers' attitudes toward advanced office technology.

Purposes of the Study

The primary purpose of this study was to analyze the attitudes of five classifications of office personnel toward specific issues concerning the use of advanced office technology (AOT). These classifications were (a) general office workers, (b) professional secretaries/administrative assistants, (c) systems analysts, (d) first-line managers/supervisors, and (e) middle managers. An additional purpose was to determine whether selected demographic, work-related, and AOT-related factors were related to subjects' attitudes toward AOT. A further purpose was to ascertain whether subjects in the five job classifications differed in their attitudes toward AOT.

This research was a replication of a 1985 study completed by Donna Kizzier at the University of Nebraska-Lincoln. Kizzier studied the attitudes of five categories of office personnel in Nebraska toward advanced office technology. She sought to determine whether relationships existed between workers' attitudes and selected demographic characteristics, and whether there was a difference in attitudes among workers in the five job categories.

Research Questions

To achieve the study purposes, answers were sought to the following research questions, which are similar to those used by Kizzier:

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1. What is the overall attitude of each of the five classifications of office personnel toward advanced office technology (AOT) issues?

2. What are the attitudes of the total sample of office personnel toward specific AOT issues?

3. Which, if any, of the following personal characteristics are significantly related to the attitudes of office personnel toward AOT issues: age, gender, educational level, socioeconomic background, and career aspirations?

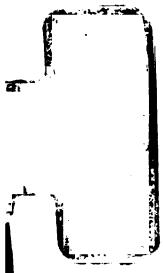
4. Which, if any, of the following work-related characteristics are significantly related to the attitudes of office personnel toward AOT issues: tenure, office work experience, industry type, working conditions, supervisory style, job variety, salary equity, work-related social interaction, and discretionary social interaction?

5. Which, if any, of the following AOT-related characteristics are significantly related to the attitudes of office personnel toward AOT issues: AOT knowledge, AOT experience, AOT operation, and involvement in AOT decision making?

6. Are there significant differences among the five classifications of office personnel with regard to their attitudes toward AOT issues?

Need for the Study

The attitudes of office personnel toward advanced office technology issues affect the productivity of a business, employee



turnover rate, job satisfaction (morale), and other factors involved in running a successful business. For this reason, a study designed to determine such attitudes is needed.

Further, the rapidly changing arena of office technology is perplexing to many office personnel. Office workers frequently are not able to use a new or updated technology--hardware or software--without additional training. Conversely, office managers declare that employees should use the most current technology, but they do not provide additional inservice training opportunities for these employees.

In the few years since the completion of Kizzier's study, the technological changes in AOT have been rapid. Office workers now need more computer-related knowledge and skills to perform the tasks associated with their jobs. Thus, there is a need to strengthen and update business education curricula at the elementary, secondary, postsecondary, and graduate levels. The data gathered in this study should be useful in such curriculum-development efforts.

Results of this analysis of the attitudes of West Virginia office personnel toward AOT issues should be useful in business offices throughout the state, to personnel trainers in business and industry, and to business educators in the classroom. Employees who work with AOT can be better prepared to deal effectively with the issues surrounding AOT.

Thus, there is a need for education and training of various types of office personnel in the use of advanced office technology.

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But in order to develop effective training programs, program planners and educators need to be aware of the attitudes of office workers toward various issues concerning the use of AOT. This study was undertaken to address that need.

Assumptions

In this study, the attitudes of five classifications of West Virginia office personnel toward advanced office technology were investigated. It was assumed that the employee classifications selected for this research closely resembled the classifications used in the Kizzier study and that these workers were likely to be involved in both decision making and direct interaction with AOT. These assumptions were based on the culture and business climate in West Virginia.

Further, it was assumed that respondents' attitudes toward AOT could be measured by the attitude scale that Kizzier used in her 1985 study. It also was assumed that the procedures used to select the sample groups were valid and that sample members were representative of the larger group of office workers in each of the five classifications (general office workers, professional secretaries/administrative assistants, systems analysts, first-line managers/supervisors, and middle managers) chosen for study.

Limitations and Generalizability of the Study

This study was descriptive in nature; thus it had some of the limitations inherent in such studies. In Kizzier's study and the present research, attitudes of office personnel toward AOT issues

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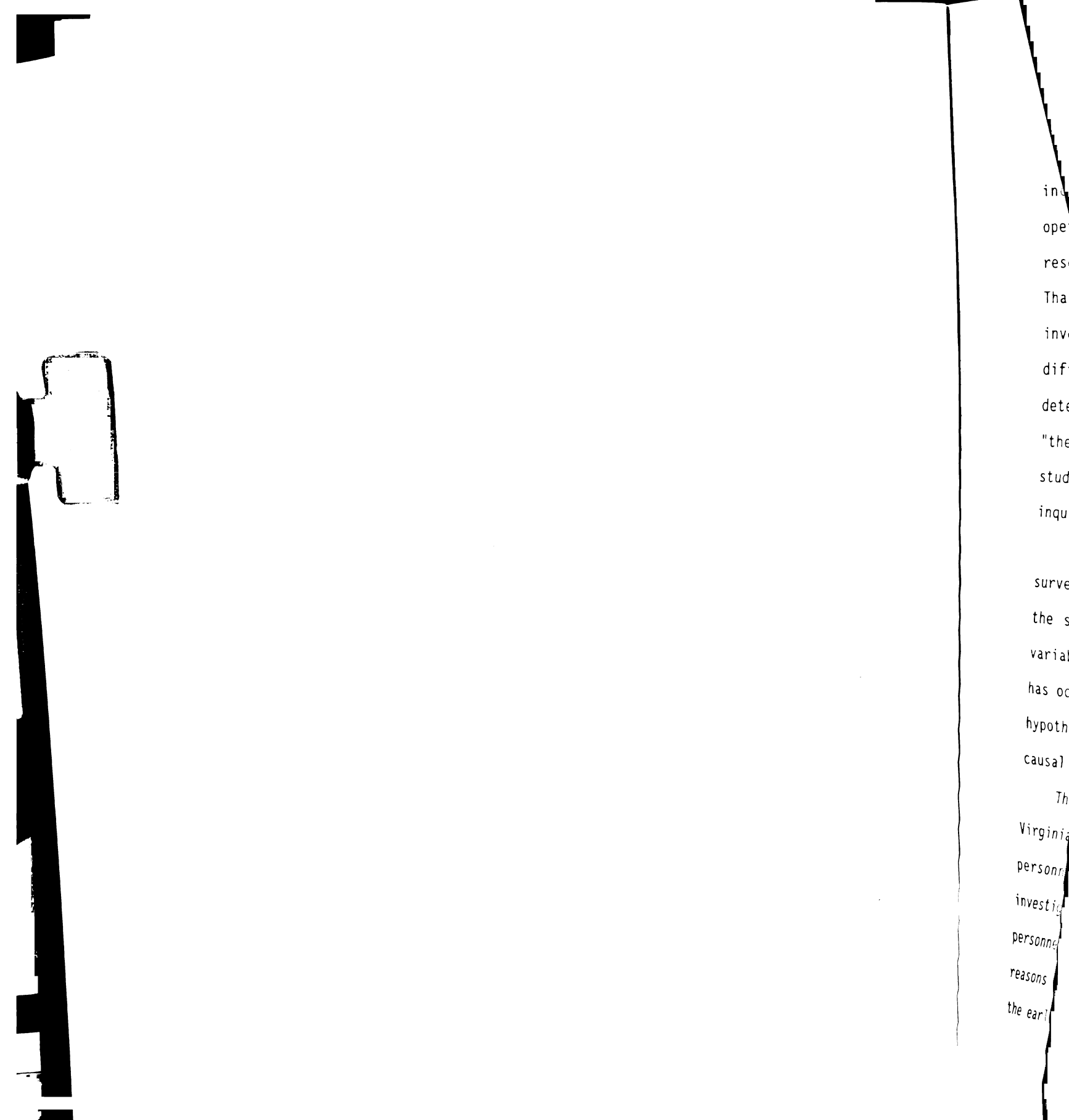
were measured during a time of rapid change in office equipment. Thus, because the rate and type of change are not constant, the results might not be generalizable beyond the samples of the respective studies. No conclusions regarding causal relationships can be drawn from the study findings because the research was nonparametric. Because a survey-based research design was used, there was no direct control of the independent variables (Kizzier, 1985).

A further limitation is that differences among the five classifications of office personnel selected for study were not controlled. Subjects in the five classifications were chosen from a random sample of employees of branches of West Virginia's government, rather than from the entire population of office workers in the state. Whereas office personnel in professional organizations in Nebraska were the subjects in Kizzier's study, this research focused on public-sector office personnel because professional groups like the ones used in the Nebraska study do not exist in West Virginia. However, the AOT employees in the government offices selected for this study were similar to the Nebraska workers. They performed similar types of tasks, and their job requirements were similar. Thus, the differences between the two subject groups were not thought to constitute a limitation with regard to replicating the earlier study.



Rationale for Replicating Kizzier's Study

Replication is one of the most powerful tools of scientific inquiry (Borg & Gall, 1983). If constructs are given clear operational definitions, other researchers can repeat the original researcher's investigation. Replication allows for self-correction. That is, if subsequent research yields the same results as the first investigation, confidence in the results is strengthened. If different results are obtained, the replicating researcher needs to determine why these changes occurred. According to Borg and Gall, "the replication need not literally repeat the conditions of another study. [It] can duplicate critical elements and also extend the inquiry into new domains" (p. 33).

Data-collection instruments such as questionnaires are used in survey research to obtain standard information from all subjects in the sample. When original relationships are maintained after new variables are introduced, replication of the original relationship has occurred. If replication occurs, there is further support for a hypothesis concerning relationships that may indicate a potential causal relationship (Borg & Gall, 1983).

The researcher decided to replicate Kizzier's study in West Virginia because it was apparent that AOT issues concerning office personnel in that state were similar to the ones Kizzier investigated in Nebraska in 1985. It was thought that office personnel in West Virginia might fear using AOT for a number of reasons and that these concerns could be discovered by replicating the earlier study.

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Definition of Terms

The following terms related to technology and the study population are defined in the context in which they are used in this dissertation.

Advanced office technology (AOT). "The use of electronic equipment to receive, process, store, copy and transmit information in and between business offices. Data processing, word processing, micrographics, reprographics, integrated processing, networking, records management, electronic mail, and telecommunications are all components of advanced office technology" (Kizzier, 1985, pp. 14-15). New areas of advanced office technology include laser and video technology (Boyce, 1987).

Data processing. "An operational sequence, usually mathematical, performed on facts and figures" (International Information/Word Processing Association, 1982, p. 11). In data processing, a sorted program is used to accept input data, process files, perform arithmetic and logic functions, and produce output. Data processing involves the use of an electronic computer, which can vary in size from a fingertip-size microprocessor, to a briefcase-size microcomputer, to a desk-size minicomputer, to a room-size mainframe (Kizzier, 1985).

Electronic mail. "The transfer of documents over communication channels, eliminating the need for the physical movement of paper" (International Information/Word Processing Association, 1982, p. 13).

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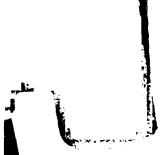
First-line manager/supervisor. A full-time employee whose major responsibility is directing the activities of a group of employees to produce a product or provide a service. This manager/supervisor is at the lowest managerial level in the organizational hierarchy and is responsible for accomplishing organizational policies and goals (Kizzier, 1985).

General office worker. A full-time office worker whose main responsibilities include production of correspondence, keeping records and accounts, and general office work. General office workers include receptionists, file clerks, data-entry operators, typists, stenographers, word-processing and data-processing specialists, and other general clerical personnel.

Information processing. The "total information-handling system of an organization" (International Information/Word Processing Association, 1982, p. 18). Information processing might include word processing, reprographics, micrographics, and data-processing communications, as well as information technology and information systems (Boyce, 1991).

Integrated processing. The use of a system that combines the advanced technologies of data processing, word processing, records management, telecommunication, reprographics, and so on. Integrated processing also allows workers to combine file structures in their work with the work or other employees and to combine separate portions of their own work into one product (Kizzier, 1985).

Micrographics. "The quick reduction, storage, and easy retrieval of information" (Kizzier, 1985, p. 16). Computer output



can be recorded directly onto micrographic media instead of paper, and these media can be read on a reader, indexed, retrieved, or printed automatically by computer and/or printed on paper (Kizzier, 1985).

Middle manager. A full-time manager whose position in the organizational hierarchy is above first-line manager/supervisor and below top management. "The middle manager's major job responsibility is to interpret policies and goals in terms of specific areas of specialization such as personnel, accounting, production, sales, or finance" (Kizzier, 1985, p. 19).

Network. "A group of computers and/or word processors connected in various configurations by communications channels" (Kizzier, 1985, pp. 16-17). Although networks usually involve computers, other forms of AOT also may be connected into the network to form a linkage of computing devices to increase efficiency.

Professional secretary/administrative assistant. A full-time office employee whose main responsibility is to relieve superiors of routine administrative duties. These employees may compose and edit documents, provide research support, handle special projects, carry out routine correspondence, and so on.

Reprographics. "The use of various technologies, such as photocopy, microfilm, laser, and offset, to produce and duplicate office documents. The data may be entered, edited, and transmitted by data or word processing equipment" (Kizzier, 1985, p. 17).

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Systems analyst. A full-time, highly skilled professional who defines problems, develops algorithms to solve these problems, and designs computer-based information-handling procedures (Kizzier, 1985).

Telecommunications. "The use of telephone and telegraphic communications facilities to transmit and receive digital data between computers and their peripheral devices" (Kizzier, 1985, p. 17).

Word processing. The means by which specific procedures and automated equipment are used to produce efficient and economical business communications, usually involving the transformation of information into readable form (International Information/Word Processing Association, 1982, p. 39).

Overview

Chapter I included the background of the study, statement of the problem, purposes of the study, and research questions. In addition, the need for the study was discussed, assumptions and limitations were set forth, and key terms were defined.

Chapter II contains a review of related literature on topics pertinent to the current research. The chapter begins with a review of literature on automated office systems and the benefits of automation in terms of managerial productivity and effectiveness, as well as the need for educational programs to prepare future managers for work in automated office systems. Research on competencies required of automated office system workers and studies of the

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effects of automation on the educational needs of office personnel also are reviewed. Kizzier's (1985) study of the attitudes of office personnel toward AOT is discussed; the present study was a replication of that research.

The study design and methodology are described in Chapter III. Methods and procedures used in carrying out the study are explained, and the population and sample-selection procedures are described. Also discussed are the instrumentation and the data-collection and data-analysis methods.

The results of the data analyses conducted in this study are reported in Chapter IV. Chapter V contains a summary of the study, the major findings, conclusions drawn from the study findings, implications for educational practice, recommendations, and the researcher's reflections.

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CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

In this chapter, literature and research related to the present study are reviewed. The first section contains a discussion of automated office systems in general, the benefits of automation in terms of managerial productivity and effectiveness, and the need for educational programs to prepare future managers for work in automated office systems. Next, research on competencies required of automated office system workers is reviewed, followed by the findings of research on the effects of automation on the educational needs of office personnel. Kizzier's (1985) study of the attitudes of office personnel toward advanced office technology is discussed, as well. The present study was a replication of Kizzier's research.

Automated Office Systems and Their Implications for the Workplace

The office of the future, a technology-oriented information-processing environment, has become a reality in American businesses. This new concept of a systematic approach to manipulating and using information for making decisions pervades all areas of business organizations. The availability of sophisticated information-processing equipment has caused major changes over the past few years in the way business people work.

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Further changes are anticipated in the future, according to Connell (1987), who predicted that "the office as we know it today will change dramatically and the importance of office workers will be greater than ever" (p. 26). Andy Muretka (cited in Rhodes, 1981), director of marketing services at A. B. Dick, concurred: "The differences in the office in the next ten years will be greater than those in the last 50 years. The office of the 1990's may look the same with the same functions, but the tools and efficiencies obviously will be different" (p. 49).

James Bair (cited in H. T. Smith, 1988), formerly with SRI International, a well-known office systems consulting firm, predicted that "the use of computer-based office systems is currently being considered, planned or undertaken by hundreds of government agencies and corporations in the industrial world" (p. 8). Of the 100 business executives surveyed in 1980 by Peat, Marwick, Mitchell and Company, approximately 50% were in the process of planning long-range advanced office systems (Smith, 1988).

The changes in business operations described above are expected to encompass all functions involved in the processing and communication of information. Not only will the production or typing function be automated, but other functions will be automated as well.

Benefits of Automation in Terms of Managerial Productivity and Effectiveness

A relatively new development with regard to office automation is the direct use of automation by managers as well as secretarial

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and clerical support personnel. Robert Dickinson (cited in Lippin, 1987), manager of office systems technology for Exxon Corporation, described office automation in this way:

> Office automation is the use of technology, methodology, and procedures, coupled with understanding of human factors to increase the efficiency and effectiveness of the office workers. It takes form in two ways--automation or routine tasks that improve the quality of service to principals in the office, and by providing automation tools to augment the capabilities of the principals. (p. 32)

Lippin explained that "this range of technology includes dictation equipment, word processing and text editing systems, information storage and retrieval systems, and distribution technology (telecommunications, facsimile, and electronic mail)" (p. 32).

Experts have predicted that, with the decreasing cost of all types of automated equipment, many companies will be able to supply their managers with "computer-based terminals, visual display units, facsimile transmission systems, word processors and even personal computers" ("The Executive's Turn," 1987, p. 48). Yankee Group analysts also have predicted that the declining cost of information-processing power "will enable managers and executives to have personalized tools for manipulating, integrating, and analyzing information" (Rhodes, 1988, p. 48). H. T. Smith (1987) concurred: "The executive will dominate the picture, with a communications terminal at his or her desk that will be designed to meet the executive's communication and informational needs" (p. 25). Having extended communication networks has become a real possibility, according to industry sources, which predict that business use of

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data communications will grow 50% each year through at least 1995 (Prince, 1980).

Although industries' capability of developing and producing advanced technology is not new, the demand for the use of such technology by business managers has increased dramatically in recent years. There are several reasons for this increased interest in using advanced technology in all areas of an organization, including the managerial functions. One of the most important reasons is the demand for increased managerial productivity. Lawrence Day (1989) of Diebold Group, management consultants, said, "Until now, the whole thrust of office technology has been to try to optimize productivity of secretarial and clerical staff. Little effort has been made to use it to help perform managerial tasks" (p. 50).

There is evidence, however, that this situation is changing and that there will be a dramatic shift from the application of automated office equipment for clerical efficiency to its use in enhancing managerial effectiveness and productivity. Grayson (cited in Presnick, 1980) asserted, "Contrary to popular belief, the professional and managerial sector and not the blue-collar area is the single most important area for productivity improvement" (p. 28). According to Dickinson (cited in Lippin, 1987), the major benefit of integrated automated systems will be in the area of managerial productivity; he predicted a savings of almost three hours a day for most management personnel. Larry Stockett (cited in Kelley, 1986), president of Micronet, research and development consultants, recommended that companies "improve the productivity of

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managers [and not] worry so much about getting more work out of the clerical staff" (p. 52). According to David Ness ("The Executive's Turn," 1987) of the Wharton School of Finance at the University of Pennsylvania, "Cutting clerical costs is important, of course, but my guess is that most companies would prefer a 15 percent improvement in managerial effectiveness to a 10 percent cut in clerical overhead" (p. 48).

This new concern with increasing productivity of white-collar employees is understandable when one examines productivity rates during the 1980s. Marvin Kornbluh (1985), information science and futures research specialist for the Library of Congress's Congressional Research Service, cited reports of the low office productivity rates for American businesses:

> Office productivity increased by only about 4 percent during the 1980's while factory productivity, spurred by automation, rose 85 percent over the same decade, according to the best estimates of some experts. The investment in capital equipment per office worker has been far less than that for each manufacturing employee, with some specialists estimating only $5 to $10 spent per "white collar" worker for every $100 for a "blue collar" worker.
>
> Offices are still largely labor-intensive, employing a large number of "knowledge" workers such as managers, administrators, accountants, programmers, personnel workers, attorneys, researchers, and engineers along with their clerical support staffs. These "office workers" spend most of their time absorbing or giving information--among themselves as well as with customers, clients, and vendors. (p. 37)

Boyer (1989) cited similar statistics:

> Industrial productivity has increased 90 percent while white collar productivity has increased a mere 4 percent. In some cases, white collar productivity has declined while inflation has mounted. With the office work force growing over a quarter of the entire United States labor base, it is obvious that some

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> changes need to be considered in the office, a perennial sanctuary of inefficiency. (p. 29)

Booz, Allen, and Hamilton, Incorporated, a well-known management consulting firm, completed a study showing that, by making full use of automated office tools, managers and other professionals can achieve a 15% time savings, which results in an annual opportunity value of approximately 15% of operating income before taxes for large organizations. According to a senior vice-president of the firm, this could mean an opportunity value of $100 billion by 1985 and $300 billion annually by 1990 (Haskell, 1986).

Closely related to the demand for increased managerial productivity is the demand for lower costs in the managerial sector of business organizations. According to Haskell (1986),

> White-collar workers account for 52.7 percent of the U.S. labor force, and the number is growing each year. It has doubled since 1955. Labor costs are rising at an annual rate of approximately 8 percent--wages (not including fringe benefits) have doubled in the last ten years--yet experts feel output has not matched this cost increase. (p. 53)

Bair (cited in Haskell, 1986) indicated that "nonclerical labor accounts for 66 percent of total costs, indicating that this area should be examined more closely for potential benefits. Included in the nonclerical category are professionals, middle management, supervisors, and executives" (p. 53). Presnick (1980) agreed that rapidly rising costs must be controlled. He said that

> There is . . . one major area contributing to declining productivity that managers can do something about--the exploding cost of the workforce within the office environment. Much of this rise can be attributed to a dramatic shift in personnel from clerical labor to "information workers"--and the higher salaries this new group requires. (p. 26)

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Other cost benefits that can be brought about through the use of automation include a reduction in travel expenses, material (paper), space, facilities, and outside services (postage, printing, and typesetting) (Lippin, 1987).

Another way that automation helps increase managerial effectiveness is that it can enhance decision making. As the volume of information needed in making business decisions has increased, so has the demand for faster processing and communication of the information on which business decisions are based. Many business organizations are turning to automated office systems to help their managers make better and more timely decisions. Hannan (cited in Rhodes, 1980) asserted, "The philosophical underpinning for future office productivity is that information has to be managed more effectively than in the past" (p. 45). One conclusion of the Booz, Allen, and Hamilton study was that "newer automated support tools can significantly enhance the quality of work when incorporated into an overall program of upgrading existing office support resources and improving certain professional practices" (Haskell, 1986, p. 60).

United States Secretary of the Treasury Donald Regan (formerly chief executive of Merrill Lynch) also contended that automation allows executives to be more effective: "It is the most efficient way I have of keeping control. I can get a day's profit figures the following morning instead of two or three days later" ("The Executive's Turn," 1987, p. 50).

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Connell (1989b) also believed that enhancing managerial effectiveness is the underlying reason for introducing technology that is designed to process and communicate information rapidly. He said, "If technology can assist management in communicating more effectively and more rapidly, then it is making a contribution far greater than saving clerical expenses. It is an aid to management in running the business" (p. 9). Connell maintained that the foremost use of technology is to help managers communicate: "Granted, the rationale for justifying acquisition of equipment is based on improving productivity and reducing costs; but the purpose of the equipment is to help management communicate" (p. 9).

Whereas increasing managerial productivity, reducing office and labor costs, and improving managerial effectiveness are recognized outcomes of the use of automation in business organizations, another reason for using automation is to remain viable in an increasingly competitive business environment. With the increasing volume of information available to business managers and the demand for rapid decision making, using automated support systems can help organizations maintain their position in the business world. Some experts, in fact, have predicted that it is essential to use automation. Lodahl (cited in Dickey, 1986) asserted that one justification for using automation is "the technological imperative in which the object is competitive survival. As companies begin to successfully use the new equipment, their competitors will eventually be forced to follow suit" (p. 19).

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Howard Anderson (cited in Lippin, 1987), president of the Yankee Group, a consulting and research firm, concurred. He said that "the automated office will . . . give those who use it a distinct advantage within their company and industry" (p. 32). According to Lippin, "The enhanced decision support [of an automated office system] can provide the company with a clear competitive advantage" (p. 50). Similarly, Day (1989) contended that businesses must accept technological advances for their managers or become stagnant:

> I believe one of the major benefits of automation will be the competitive advantage it will give managers. . . . Perhaps more significant is the potential that automation holds for expanding the scope and augmenting the role of managers. Rapid access to relevant information will make possible a depth of analysis of problems in a period of time that seems inconceivable today. (p. 50)

Many experts now advise that future managerial personnel be knowledgeable about automation in order to improve managerial productivity and effectiveness, to decrease communication costs within the organization, and to remain viable in a continually changing business environment. H. T. Smith (1988) suggested that "management would be well advised to be prepared for the changes [automation] will bring to the office environment" (p. 9). Likewise, Hershey (1989) noted that:

> There is an increasing need for more professional and functionally expert managers to administer today's office operations. In too many firms those who are managing office operations have been appointed to such posts because of their experience in other areas rather than because of their expertise. And it is common to find offices where specific office systems operate almost totally without regard to other related office operations. Examples of this lack of coordination can be found between such "integratable" areas as

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> word processing and records management, data processing and word processing, and telecommunications and teleprocessing. . . . There is a need for top management to apply a systems approach to the organization and management of office operations. (p. 26)

The need for managers who are knowledgeable about the benefits of automation was underscored in a Fortune magazine market research report:

> It seems likely that broad acceptance of current and future technologies will be hindered until the top managers understand that they, too, can benefit from employing the office concepts made feasible and desirable by modern hardware. ("The Office: Next to Automate?," 1986, p. 35)

H. T. Smith (1987c) also suggested the need for a change in the preparation of future office executives:

> Change agents need to be informed in both general knowledge and technical information. They should have an organization-wide viewpoint to be able to see the impact of change on the entire organization. A working vocabulary of technical terms in order to communicate with technical people is needed. They need to know generally how equipment works and what its capabilities are. (p. 30)

Many experts believe, however, that, although the greatest potential for improved effectiveness lies with managerial personnel, managers often are the last people to accept and use automation. The reluctance of managerial personnel to accept the benefits of automation has frequently been noted. Presnick (1980) cited an "inherent resistance to change in the way managers handle information and communicate with others" (p. 27). H. T. Smith (1988) reported that "the greatest obstacles advanced office systems face are people factors--overcoming resistance to change" (p. 32). Rodgers (cited in Byron, 1989) claimed that the biggest stumbling block to the use of futuristic equipment is the business executive;

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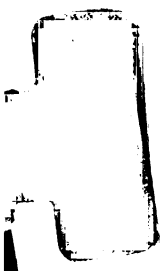
he said, "The office has not changed its essential procedures for over 100 years, and particularly the professionals become a bit wary when anyone tries to change what goes on" (p. 81).

Also, managers are reluctant to use technologically advanced equipment involving a keyboard, according to Phil Roybal (cited in Byron, 1989), marketing manager for Apple Computers. He said, "Most managers . . . regard a keyboard as something that doesn't suit their status" (p. 81). Connell (1988b) agreed that the office is the last area of business to automate because "office personnel resist technology, especially at the middle-management level, because they feel that technology tends to be rigid, structured, unresponsive to specific user needs, unforgiving of errors and a constraint on personal creativity" (p. 37). This reluctance to accept and use modern technology is a hindrance to improved managerial productivity and effectiveness.

Implications of Changes in Office Technology for Educators

Because of the rapid and pervasive changes taking place in business offices and the need for managers who are educated in the concepts inherent in those changes, curriculum developers and educators must begin including in their curricula training that will help future managers overcome their reluctance to accept and use modern technology. Rosen and Fielden (1974) contended that education is one of the most important factors in overcoming the



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fear and threat that many executives experience in relation to office automation. Furthermore, Boyer (1989) stated:

> Each individual must be aware of the benefits that can come from the proper application of technology. This may require a readjustment of traditional office sociology. In the future, all who enter the office should be prepared with the necessary skills to make change possible. If the business community initiates change, education will soon have to meet the demand for personnel trained for new roles. (p. 30)

Although education can improve the effectiveness of future business managers, H. T. Smith (1987a) indicated that "educational institutions traditionally are slow to respond to changing needs. Business colleges may not meet the needs of business" (p. 30). Business educators are beginning to realize that sweeping changes in educational programs are needed, but Smith lamented that

> Professional business schools have been largely unaware of the full impact of the changing office on their programs. When they have seen the need, the response has generally been to add more programming courses. As top management becomes more fully aware of the emerging discipline of information management, business schools are likely to respond with new courses and programs. (p. 32)

Hershey (1989) agreed that business schools need to reevaluate and revamp their programs to include the educational changes that are needed in the preparation of future managers for work in automated office systems:

> There is also a lack of attention to office systems administration in schools of business throughout the country. Even though other areas of business (such as marketing, finance, and production) have received extensive curricular attention in schools of business, little attention has been devoted to the study, systematic analysis and design of support systems. . . . A curriculum is needed that emphasizes a systems approach to the administration of support systems and stresses the integration of such areas as data processing, word processing, records management, micrographics, and telecommunications. (p. 26)

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Competencies Required of Automated Office Systems Workers

Four studies related to competency identification and the importance of assessment were reviewed. The first of these, the Brown (1987) study, was concerned with identifying, verifying, and validating competencies needed by vocational teacher educators as they pertained to advanced office technology. When researching the attitudes of office personnel toward AOT, it is important to understand the competencies required of secondary and postsecondary teachers because these educators' attitudes can influence curricular change.

The B. H. Smith (1979) study and the Stallard, Bahniuk, and Petree (1989) study dealt with competencies required of administrative office managers. The Smith study also was concerned with whether these competencies were being taught in collegiate office administration courses. It is important to understand the attitudes of these managers toward AOT because such attitudes can influence procedural and system changes in the office workplace.

The Clinkscale and Mayer (1980) study dealt with the identification and validation of dictation competencies. This study is relevant to the current research because dictation has long been a major part of the office function. Thus, it is important to understand the competencies needed for traditional stenographic dictation and the corresponding transcription, as well as the competencies needed for machine dictation and transcription.

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The Brown Study

Brown's (1987) purpose was to identify, verify, and validate competencies needed by vocational teacher educators as they pertained to advanced office technology. Secondary purposes were to compare the perceptions of vocational teacher educator program administrators and teacher educators regarding competencies needed by vocational teacher educators. The sample for this study consisted of administrators and vocational teacher educators in 33 institutions that were approved for governmental funding in 1987-86.

From a review of literature, Brown identified 56 competencies needed by vocational teacher educators, which he grouped into four competency clusters: general, research, service, and teaching. Two pilot tests, the first with five vocational teacher educators at the University of Tennessee and the second with eight vocational teacher educators randomly selected from the sample of 276, resulted in augmentation and refinement of the original competency list. The revised questionnaire, which contained 73 competencies, was pilot tested with 46 vocational teacher educators randomly selected from the 276-member sample; the purpose of the third pilot test was to determine internal reliability of the instrument.

The final questionnaire was sent to the sample of vocational teacher educators and administrators, who were asked to rate the degree of importance of each competency using a 5-point Likert-type rating scale. Vocational teacher educators also were asked to supply demographic information to be used in developing a profile of the contemporary vocational teacher educator.

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Forty-five of the 73 competencies included in the questionnaire received mean importance ratings of 4.0 or above on the 5-point scale, indicating they were "of above average importance." No significant differences were found between vocational teacher educators and program administrators with regard to their perceptions of the importance of the 73 competencies. Age, gender, and previous teaching experience had little influence on teacher educators' perceptions of competencies required to perform the role of vocational teacher educator as it pertained to AOT.

The Brown study is related to the present research because an objective of both studies was to provide information with which to develop more relevant curricula in the areas of interest.

The Smith Study

The major purpose of the B. H. Smith (1979) study was to determine how the content of administrative office management courses could be improved to provide more relevant instruction in advanced office technology. Objectives were (a) to identify advanced office technology competencies needed by office managers and the importance attached to those competencies by office managers, (b) to identify the competencies included in collegiate office management courses and the importance attached to those competencies by instructors of such courses, (c) to compare the competencies included in office management courses and the degree of importance attached to them by office managers and office management instructors, (d) to determine whether selected demographic

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characteristics influenced subjects' responses, and (e) to compare demographic characteristics of office managers and office management instructors.

From a review of literature, Smith identified 44 competencies related to the role of administrative office manager, which he included in questionnaires developed for office managers and instructors of administrative office management courses. The final instrument was mailed to presidents of Administrative Management Society (AMS) chapters (representing the population of office managers) and to instructors of collegiate administrative office management courses.

Office managers and office management instructors were asked to rate the importance of each competency using a 5-point Likert-type rating scale ranging from 5 (very high importance) to 1 (very low importance). Managers were asked to indicate whether each competency was included in their jobs as office managers, and instructors were asked to indicate whether the competencies were included in their teaching. Both groups also were asked to supply selected demographic information.

Smith found that administrative office managers were performing the 44 identified competencies in their jobs, and office management instructors were including the same 44 competencies in their instruction. However, the two groups differed in the degree of importance they placed on 28 of the 44 competencies. Office managers placed greater emphasis on competencies related to

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communicating, decision making, directing, and cost and budgeting control than the instructors placed on these competencies in their instruction. Conversely, instructors placed greater importance on competencies related to office function and work measurement than managers placed on them in their actual job performance.

In comparing the frequency with which the competencies were included in the office managers' jobs and in office management courses, Smith found a significant difference with regard to 14 competencies. Thirteen of the 14 competencies were included in a significantly higher percentage of courses than they were in office mangers' jobs; one competency (listening skills) was included in a higher percentage of managers' jobs than it was in office management courses.

Moreover, selected demographic characteristics affected the respondents' ratings of the importance of certain competencies. A significant difference was found in competence ratings, based on respondents' level of formal education, years of experience, and hours of instruction they had received in office management courses.

The Smith study is related to the present investigation in that the ultimate objective of both was to improve the relevance of collegiate instruction for future business managers. Both studies were concerned with the changing needs in business offices brought about by technology. However, the Smith study was concerned with specific skills and knowledge (competencies), whereas the present study was concerned with broader general concepts related to the office of the future.

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The Stallard, Bahniuk, and Petree Study

Stallard, Bahniuk, and Petree (1987) conducted a study to determine, verify, and validate competencies needed by administrative office managers in contemporary business offices. Their purpose was to provide a research base that could be used by collegiate business faculty to provide more relevant instruction in administrative office management programs as they dealt with advanced office technology.

The researchers surveyed three widely used collegiate administrative office management textbooks to determine competencies for inclusion in the questionnaire list of competencies needed by administrative office managers. The identified competencies were divided into 20 broad categories. Three of those categories (Recruitment and Dismissal, Supervision, and Human Relations and Motivation) were designated as "people" related, and the remaining 17 categories were considered to be "systems or procedures" related. The final instrument contained 184 competencies under the 20 broad categories. Respondents used a Likert-type scale (with ratings ranging from unimportant to extremely important) to rate the importance of each of the 184 competencies.

Questionnaires were mailed to 2,478 firms randomly selected from Standard and Poor's 1986 Standard Industrial Classification Codes of Corporations Directory list of 37,057 firms having at least $1 million in sales and 40 or more employees. From the questionnaires that were mailed, 311 usable responses were received.

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None of the 184 competencies was rated as being "unimportant," and only 10 competencies received ratings of "some importance." All other competencies were rated as "important, "very important," or "extremely important." The five broad categories receiving the highest ratings of importance were Budgeting, Employee Incentives and Relations, Standards and Job Evaluation, Human Relations and Motivation, and Recruitment and Dismissal.

The Stallard et al. study is related to the current study in that both were intended to provide information that would be useful in making educational programs in collegiate business schools more relevant to today's offices. However, the Stallard et al. study was concerned only with office managers, whereas the current research was concerned with five classifications or levels of office personnel.

The Clinkscale and Mayer Study

The purposes of the Clinkscale and Mayer (1980) study were (a) to construct a comprehensive and validated list of dictation competencies using traditional stenographic dictation and transcription, as well as advanced office technologies using machine dictation and transcription and (b) to compare the perceptions of dictators, word processors, and business educators regarding the importance of these competencies. After a comprehensive review of literature, the researchers developed a preliminary list containing 66 competencies in 14 categories. The preliminary list was submitted to a jury of experts including executives, office

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managers, business educators, transcriptionists, secretaries, and word processors for the purpose of content validation. Based on suggestions made by the jury of experts, the 66-item list was refined into the final list of competencies.

A questionnaire containing the 66 dictation competencies was mailed to selected dictators, business educators, and word processors. Respondents were asked to rate the importance of each competency using a 5-point Likert-type scale ranging from 1 (very important) to 5 (not important).

Analysis of the data revealed that most of the means clustered in the *very important* or *important* rating categories; relatively few competencies had mean ratings of *undecided, slightly important,* or *not important.* When the group ratings of dictators, business educators, and word processors for each competency were compared, it was found that the three groups agreed on 168 of the 198 comparisons. Of the 30 competencies on which the groups differed significantly, the largest number of significant differences were found in the following categories: "articulate clearly," "position receiving unit properly," and "dictate special features of message." Where significant differences in the importance ratings were found, business educators disagreed more often with each of the other groups than did the word processors and the dictators. Moreover, business educators disagreed more often with word processors than with dictators, and business educators tended to assign higher levels of importance to the competencies than did either of the other groups.

The Clinkscale and Mayer study and the current research are similar in that both were ultimately concerned with improving instruction in collegiate business programs. In addition, both studies were concerned with the perceptions or attitudes of practitioners in business and industry. However, the area of interest in the Clinkscale and Mayer study (dictation) was more specific than that of the current study (office automation). Also, the former study dealt with particular competencies, whereas the latter focused on broad general concepts.

Effects of Automation on the Educational Needs of Office Personnel

Two studies were reviewed that dealt with the effects of automation on the changing nature of office work and, therefore, the changing educational needs of future office workers, including managerial personnel. Buford (1979) was concerned with discovering ways in which technological advances in business offices affected the career paths of office employees, both clerical and managerial. Lewis (1987) investigated changes that had taken place in business letter communications as a result of the introduction of advanced office technology, including word processing and desktop publishing, into business organizations.

The Buford Study

Buford's (1979) primary purpose was to determine how features of the office of the future, as perceived by administrative, supervisory, and clerical employees, were related to the career

paths of office workers. Answers were sought to questions regarding (a) new equipment being used in offices that was not used three to five years before; (b) knowledge, skills, and personal characteristics perceived to be most important for office workers in 1976 and in 1979; (c) company-sponsored activities or training programs that lead to advancement within the organization; (d) employees' educational levels at the time of their initial employment; (e) whether job titles and/or classifications for initial employment are changing to reflect new occupational specialties; (f) related jobs held by office workers before their current jobs; and (g) office workers' perceptions of their career paths in the next three to five years.

Participants were selected from home or parent insurance companies located in the Columbus, Ohio, metropolitan area. Eighteen firms met the requirements for inclusion in the study, and executives of 16 firms agreed to allow employees in their organizations to participate in the study. Randomly selected administrative (business executives), supervisory, and clerical personnel were asked to respond to an interview and a questionnaire.

Buford found that several new types of technology were being used in 1979 that had not been used in the previous three to five years. Most of the new technology was related to data processing, word processing, micrographics, or telecommunications. Of 41 administrative personnel responding to the survey, 63% stated that they were using or had access to CRT computer terminals. Further, 98% of the administrative personnel indicated that they were aware

of other new technology beyond what was being used in their companies; several indicated that feasibility studies were being done with regard to possible installation of additional advanced systems.

In general, respondents reported that their companies had updated their equipment to include more powerful and sophisticated computer-processing systems and greater use of computer terminals for input, retrieval, and revision of data. Respondents also indicated that they thought knowledge and skills associated with micrographics, word processing, and telecommunication would be more important in 1991 than they were in 1979.

The Buford study is related to the present investigation in that both were concerned with the effect of developing trends in the use of automated office systems in modern businesses. The Buford study, however, dealt primarily with the effect of those developing trends on career paths and advancement among three levels of office personnel (administrative, supervisory, and clerical), whereas the present study was indirectly concerned with the effect of developing trends in AOT on the educational needs of future managerial personnel in automated offices.

The Lewis Study

The purpose of the Lewis (1987) study was to determine the relationship of changes in business letter writing in business organizations using word processing to selected characteristics of organizations. The objectives were to determine specific

relationships between selected characteristics of business organizations and (a) methods of originating business letters, (b) the quality of business letters produced in word-processing centers, (c) the quantity of business letters written before and after the introduction of word processing within business organizations, (d) turnaround time for production of business letters, (e) letter styles used most often, and (f) the extent to which form letters were used.

Lewis developed a two-part questionnaire to survey word-processing center supervisors and word-processing users (business executives whose correspondence was produced with technologically advanced typewriting equipment). The first part of the questionnaire was completed by the word-processing center supervisor at each of the business organizations, and the second part was completed by a word-processing user selected by the supervisor. The sample included 320 organizations.

Three significant findings from Lewis's study relate to the current study. Lewis found that, in organizations that offered inservice training for word-processing users, users originated a greater percentage of their business letters (46%) through telephone dictation devices (the fastest dictation method) than did users whose organizations did not provide inservice training programs (only 23% of their letters were originated by means of telephone dictation devices). Similarly, Lewis found that business letter originators who had received training in proper dictation techniques originated 47% of their letters through telephone dictation,

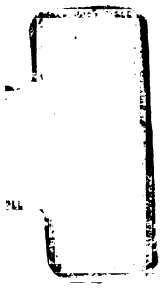
compared to only 12% of the users who had no training in dictation techniques. Conversely, originators who had no inservice training used handwriting (the slowest method of origination) for 33% of their letters, whereas originators who had previous training in dictation techniques originated only 23% of their letters by handwriting.

The Lewis study is related to the current study in that both were concerned ultimately with the improvement of educational programs for future business managers. The parts of the Lewis study that related specifically to the current investigation were those pertaining to the implications of new technology with regard to the educational needs of future business managers.

Attitudes of Office Personnel Toward Issues Related to Advanced Office Technology

In 1985, Kizzier studied the attitudes of five classifications of office personnel in Nebraska toward issues related to advanced office technology. She also attempted to determine whether there were relationships between these attitudes and selected demographic characteristics of the respondents, and whether personnel in the five job classifications differed in their attitudes toward AOT. The sample consisted of 247 randomly selected members of six professional associations in Lincoln, Nebraska.

Kizzier developed a 51-item Likert-type attitude scale to measure AOT attitudes. Construct validity was ascertained by means of a pilot study, review by a validation panel, and a two-round



Delphi technique. Subjects also completed a demographic data sheet, so that demographic data could be correlated with attitudes.

Overall, the respondents' attitudes toward AOT were positive. Middle managers had the most positive attitudes, followed by systems analysts, supervisors, and secretaries. Clerical workers had significantly more negative attitudes than did respondents in the other job classifications.

Most of the respondents were receptive to an AOT-instigated shorter work week; they were not receptive to alternative work places, but thought that AOT would bring about improved office reorganization. Respondents thought that AOT was inevitable, but that it would have a mixed effect on office employment. However, they believed AOT would create more stimulating positions for entry-level personnel and increase office productivity. Clerical personnel perceived increased job pressure, isolation, and monotony as a result of AOT.

Most workers in Kizzier's study looked forward to AOT job-related changes and felt pressure to learn about AOT; however, they found company-sponsored training inadequate to their needs. Most respondents were concerned about crime and privacy related to AOT, but concern about health issues was mixed. Participants' attitudes became more positive as their AOT knowledge increased, their supervisory style became more participative, and their job variety increased. Conversely, subjects' attitudes became more negative as their age increased, office work experience increased, and working conditions deteriorated. Supervisors' attitudes became more

negative as their educational level increased; clerical workers' and secretaries' attitudes became more negative as their tenure with the organization increased. Office workers' feelings of AOT-related emotional stress intensified with age. Significant relationships were found between attitudes and industry type.

According to Kizzier, her research supported training in AOT concepts that goes beyond hands-on applications. It also supported retraining of clerical personnel for upgraded positions and training of managers to understand realistic capabilities of AOT.

Summary

This chapter contained a review of literature and research on topics pertinent to the present study. A general description of automated office systems was provided, followed by a discussion of the benefits of automation in terms of managerial productivity and effectiveness, and the need for educational programs to prepare future managers for work in automated office systems. Next, research on competencies required of automated office system workers was reviewed, followed by studies on the effects of automation on the educational needs of office personnel. Kizzier's (1985) study of the attitudes of office personnel toward advanced office technology issues also was discussed. The design and methodology of the present research, which was a replication of Kizzier's study, are the subject of Chapter III.

CHAPTER III

METHODS AND PROCEDURES

Introduction

The researcher's primary purpose of this study was to analyze the attitudes of five classifications of office personnel toward specific issues concerning the use of advanced office technology (AOT). An additional purpose was to determine whether selected demographic, work-related, and AOT-related factors were related to subjects' attitudes toward AOT. A further purpose was to ascertain whether subjects in the five job classifications differed in their attitudes toward AOT.

This study was a replication of the research that Kizzier conducted with office personnel in Nebraska in 1985. Both studies were descriptive in nature. According to Gay (1986),

> Descriptive research involves collecting data in order to test hypotheses or answer questions concerning the current status of the subject of the study. A descriptive study determines and reports the way things are. One common type of descriptive research involves assessing attitudes or opinions. . . . Descriptive data are typically collected through a questionnaire survey, an interview, or observation. (p. 10)

The population and sample, instrumentation, and procedures used in collecting and analyzing the data are discussed in this chapter.

Population and Sample

The population identified for this study included (a) general office workers, (b) professional secretaries/administrative assistants, (c) systems analysts, (d) first-line managers/ supervisors, and (e) middle managers. The job functions of these employees were as follows:

> **General Office Worker:** Completes one or more routine tasks assigned by supervisors, such as operating office machines, operating word processors, filing, typing, keyboarding, data entry on a personal stand-alone or a mainframe computer, and posting.
>
> **Professional Secretary/Administrative Assistant:** Supports managers/administrators by completing routine administrative duties and possibly supervising general office personnel.
>
> **Systems Analyst:** Plans efficient methods of processing data, handling results, and using various techniques to analyze problems and design new systems.
>
> **First-line Manager/Supervisor:** Translates organizational policies and goals into reality, deals directly with other employees to see that schedules and quality are maintained.
>
> **Middle Manager:** Interprets organizational policies and goals in specialized areas, such as finance, accounting, production, sales, personnel, and so on; analyzes and summarizes data to aid in decision making.

Sample members were selected from the following six divisions of the West Virginia state governmental structure: employment security, executive, finance administration, human services, judicial, and legislative. Approximately 60 individuals were selected at random from each division as potential sample members.

Mailing lists of the six West Virginia state government divisions were generated with the permission of each division head. The researcher examined these lists and excluded the names of

individuals who were not in one of the five classifications of office personnel to be studied. Those eligible for the sample were defined as full-time office personnel in one of the five identified job classifications. Those deemed ineligible included retirees, top-level managers, educators, and sales representatives.

Using a table of random numbers, the researcher selected potential sample members from the list of eligible personnel from each governmental division. To do this, a maximum sample size was first calculated for each division, using Loether and McTavish's (1988) formula for determining the suitable size for a simple random sample. This formula is intended to achieve a 90% confidence level. The minimum number of cases to sample, in order to achieve a 90% confidence level, was calculated at 368, but the researcher decided to oversample by approximately 100 cases to achieve a higher return rate. Of the 468 surveys that were sent to eligible sample members, 360 were completed and returned, for a return rate of 77%. This is considered a good return rate for the type of population sampled (Loether & McTavish, 1988).

The number of questionnaires sent to individuals in the five job classifications and the number of surveys returned by each group are shown in Table 1. As seen in the table, usable questionnaires were returned by 89 general office workers, 135 professional secretaries/administrative assistants, 36 systems analysts, 69 first-line managers/supervisors, and 31 middle managers. It also should be noted that the six governmental divisions were equally represented in the sample (employment security = 64, executive = 57,

finance administration = 62, human services = 63, judicial = 58, and legislative = 56).

Table 1.--Number of surveys mailed and returned, by job classification.

Job Classification	Number of Surveys Sent	Number of Surveys Returned	Return Rate (%)
General office worker	112	89	79%
Professional secretary/ administrative assistant	183	135	74%
Systems analyst	47	36	77%
First-line manager/ supervisor	78	69	88%
Middle manager	48	31	65%
Total	468	360	77%

Instrumentation

Construct Validity

The attitude scale and demographic data sheet used in this study were duplicates of the ones Kizzier used in her research study. Copies of these instruments may be found in Appendix A. Minor modifications were made in wording (e.g., the researcher's return address) to make the instruments applicable to this research. Kizzier constructed the survey items after conducting an extensive literature review; she then pilot tested the instrument. Construct

validity was ascertained by means of the pilot study, review by a validation panel, and a two-round Delphi survey.

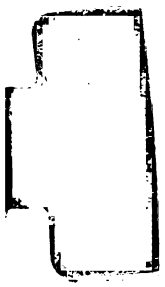
Reliability

Cronbach's alpha was used to compute the reliability coefficients of items on the attitude scale (Borg & Gall, 1983). According to Kizzier, the five subscales of the attitude scale were found to have relatively high internal consistency reliability. The present researcher also used Cronbach's alpha to compute reliability coefficients for items in the five subscales of the attitude scale as administered in this study. Again, relatively high internal consistency reliability was found (see Table A.1, Appendix A).

The Attitude Scale

The attitude scale contained 49 statements regarding issues related to AOT. Respondents indicated their degree of agreement or disagreement with each statement, using a 7-point Likert-type scale ranging from -3 (strongly disagree) to +3 (strongly agree). For purposes of analyzing and reporting the data, this scale was converted so that a rating of 1 (previously -3) equaled *strongly disagree*, 4 (previously 0) equaled *no opinion/uncertain*, and 7 (previously +3) equaled *strongly agree*.

The 49 statements on the attitude scale were grouped into five subscales, according to the AOT issues they addressed. They were validated by Kizzier in her Nebraska study. These subscales were as follows:



Sociological issues (Items 1-9). This subscale included issues that "affect the way people interact socially in the office" (Kizzier, 1985, p. 137).

Mechanical curiosity (Items 10-19). This subscale included items pertaining to respondents' attitudes regarding the "gadgetry" of AOT (Kizzier, 1985, p. 137).

Economic (Items 20-29). This subscale included issues related to "how AOT affects the office economy," such as office employment, productivity, and salaries (Kizzier, 1985, p. 137).

Motivational (Items 30-41). This subscale included issues related to "whether AOT enhanced office jobs or made office jobs less satisfying" (Kizzier, 1985, pp. 137-138).

Human vitalism (Items 42-49). This subscale included issues related to "whether AOT is replacing office tasks" (Kizzier, 1985, p. 138).

Demographic Data Sheet

The 21 multiple-choice items on the demographic data sheet were designed to gather information concerning the personal, work-related, and AOT-related characteristics of the respondents. This demographic information was used in determining whether there was a relationship between respondents' attitudes toward the use of AOT and their demographic characteristics.

Data-Collection Procedures

Because the present study was a replication of Kizzier's (1985) research, the investigator first obtained that researcher's

permission to use her instrument in this study (see Appendix B). Next, permission was obtained from the Michigan State University Committee on Research Involving Human Subjects (UCRIHS) to carry out the investigation (see approval letter, Appendix B). In March 1991, contact was made with the manager of each of the six divisions of the West Virginia state government whose employees were to be surveyed. The purpose of the study was explained, and their permission to survey the employees in those divisions was requested.

On April 9, 1991, a memorandum was mailed to randomly selected individuals from each division whose job classifications were of interest in this investigation--(a) general office workers, (b) professional secretaries/administrative assistants, (c) systems analysts, (d) first-line managers/ supervisors, and (e) middle managers. In this memorandum the purpose of the study was explained, they were asked for their cooperation in filling out the survey, which they would receive the following week, and they were ensured that their responses would be kept confidential (see Appendix B).

The attitude scale and demographic data sheet were mailed to the 468 randomly selected office workers in the five job classifications on April 15, 1991. Included in the packet was a release form (Appendix B), which respondents were asked to sign and return with the completed survey. Marshall University letterhead was used for the cover letter/release form to add credibility to the study.

On May 15, a follow-up postcard (Appendix B) was mailed to those who had not returned questionnaires. Nonrespondents were asked to complete the survey and return it within one week. No further follow-up was done.

Data-Analysis Procedures

Data from the 360 completed instruments were entered into the mainframe computer at Marshall University. Statistical analyses were conducted, using the Statistical Package for the Social Sciences (SPSS) (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975) software program. Specific analyses used for each research question were as follows:

1. What is the overall attitude of each of the five classifications of office personnel toward advanced office technology (AOT) issues? Group means and standard deviations were calculated to determine the overall attitudes toward AOT of each of the five classifications of office personnel included in the study.

2. What are the attitudes of the total sample of office personnel toward specific AOT issues? Response distributions were calculated to determine respondents' attitudes toward each of the 51 attitude items concerning AOT issues.

3. Which, if any, of the following personal characteristics are significantly related to the attitudes of office personnel toward AOT issues: age, gender, educational level, socioeconomic background, and career aspirations? The point biserial correlation coefficient was computed to determine whether there was a

significant relationship, positive or negative, between respondents' gender and their attitudes toward the AOT issues. This was done because gender is a dichotomous variable and attitude is a continuous variable. Pearson product-moment correlation coefficients were computed to determine whether there was a significant relationship between the attitudes of the entire sample toward AOT and the remaining demographic characteristics. Correlation coefficients also were computed to determine whether there were significant relationships between the four personal characteristics other than gender and each job-classification group's attitude toward AOT. For all correlation analyses, the significance level was set at .05.

4. Which, if any, of the following work-related characteristics are significantly related to the attitudes of office personnel toward AOT issues: tenure, office work experience, industry type, working conditions, supervisory style, job variety, salary equity, work-related social interaction, and discretionary social interaction? Pearson product-moment correlation coefficients were computed to determine whether there was a significant relationship, positive or negative, between the attitudes of the entire sample toward AOT and the eight work-related characteristics. Correlation coefficients also were computed to determine whether there were significant relationships between the eight work-related characteristics and each job-classification group's attitude toward AOT. For all correlation analyses, the significance level was set at .05.

5. Which, if any, of the following AOT-related characteristics are significantly related to the attitudes of office personnel toward AOT issues: AOT knowledge, AOT experience, AOT operation, and involvement in AOT decision making? Pearson product-moment correlation coefficients were computed to determine whether there was a significant relationship, positive or negative, between the attitudes of the entire sample toward AOT and the four AOT-related characteristics. Correlation coefficients also were computed to determine whether there were significant relationships between the four AOT-related characteristics and each job-classification group's attitude toward AOT. For all correlation analyses, the significance level was set at .05.

6. Are there significant differences among the five classifications of office personnel with regard to their attitudes toward AOT issues? Analysis of variance (ANOVA) was used to determine whether there were significant differences in attitudes toward AOT among the five classifications of office personnel. The .05 level was the criterion for significance. If a significant difference in AOT attitudes was found among groups, the Tukey-HSD procedure was used to determine which group(s) differed significantly from the other groups.

Summary

The procedures involved in conducting the present study, which was a replication of the 1985 study by Kizzier, were reported in this chapter. The design of the study was descriptive research,

which included correlational analyses. In this study, the attitudes toward AOT of office personnel in five job classifications--general office workers, professional secretaries/administrative assistants, systems analysts, first-line managers/ supervisors, and middle managers--were analyzed. In addition, an attempt was made to determine whether there was a relationship between respondents' attitudes toward AOT and selected demographic, work-related, and AOT-related characteristics. The researcher also attempted to discover whether there was a difference in attitudes toward AOT among respondents in the five job classifications.

Respondents indicated their attitudes toward AOT using an attitude survey developed by Kizzier. They also completed a demographic data sheet. Results of the data analyses are reported in Chapter IV.

CHAPTER IV

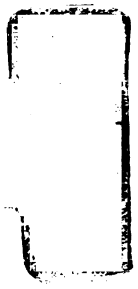
RESULTS OF THE DATA ANALYSES

Introduction

The primary purpose of this study was to analyze the attitudes of five classifications of office personnel toward specific issues concerning the use of advanced office technology (AOT). An additional purpose was to determine whether selected demographic, work-related, and AOT-related factors were related to subjects' attitudes toward AOT. A further purpose was to ascertain whether subjects in the five job classifications differed in their attitudes toward AOT.

In this chapter, the findings of the statistical analyses are presented. Data were collected from attitude scales and demographic sheets returned by 360 office workers who comprised the study sample. The breakdown of the sample by job classification was as follows: (a) general office workers (n = 89), (b) professional secretaries/administrative assistants (n = 135), (c) systems analysts (n = 36), (d) first-line managers/supervisors (n = 69), and (e) middle managers (n = 31). These office workers were employed in six divisions of the state government in West Virginia.

In the following pages, the results of the data analyses are reported. Each research question is restated, followed by the results for that question.



Research Question 1: Overall Attitudes Toward AOT

What is the overall attitude of each of the five classifications of office personnel toward advanced office technology (AOT) issues?

Group means and standard deviations were calculated to determine the overall attitude toward AOT of each of the five job-classification groups. Respondents indicated their level of agreement with the 49 items in the attitude survey, using a 7-point Likert scale. Responses ranged from 1 (strongly disagree) to 7 (strongly agree). Thus, the higher the mean, the more positive the attitude toward AOT.

Group means. Table 2 shows the attitude means for the five job-classification groups. Middle managers had the most positive attitude toward AOT (mean = 5.3349). This may be explained by their previous exposure to and experience with AOT. First-line managers/supervisors had the next highest mean (5.3278), followed by systems analysts (5.0031) and general office workers (4.9028). Professional secretaries/administrative assistants had the lowest mean (4.2341). All of these means, however, indicated a fairly positive attitude toward AOT.

Standard deviations. Systems analysts had the lowest standard deviation (.2387); first-line managers/supervisors were next at .3298, followed by middle managers at .4996, general office workers at .5607, and professional secretaries/administrative assistants at .7021. The lower the standard deviation, the more agreement there was within the group regarding their attitudes toward AOT.

Table 2.--Overall attitude toward AOT by job-classification group (N = 360).

Job Classification	Minimum	Maximum	Mean	Std. Dev.	Std. Error
General office workers (n = 89)	3.3740	5.7011	4.9028	.5607	.0772
Profes. secretaries/ admin. assistants (n = 135)	2.7620	6.1027	4.2341	.7021	.0698
Systems analysts (n = 36)	4.7998	6.0231	5.0031	.2387	.0439
First-line managers/ supervisors (n = 69)	4.9810	6.2091	5.3278	.3298	.0924
Middle managers (n = 31)	4.0245	6.5672	5.3349	.4996	.0503
Overall	3.9884	6.1276	4.9605	.4662	.0527

Key to Ratings:

1 = Strongly Disagree
2 = Disagree
3 = Mildly Disagree
4 = No Opinion/Uncertain
5 = Mildly Agree
6 = Agree
7 = Strongly Agree

Summary. Research Question 1 was concerned with the overall attitude toward AOT of each of the five classifications of office personnel. Middle managers had the most positive attitude toward AOT, followed closely by first-line managers/supervisors. Next were systems analysts, general office workers, and professional secretaries/administrative assistants, in that order. Systems analysts had the lowest standard deviation in means, followed by

supervisors, middle managers, general office workers, and secretaries, in that order.

Research Question 2: Attitudes of the Total Sample Toward Specific AOT Issues

What are the attitudes of the total sample of office personnel toward specific AOT issues?

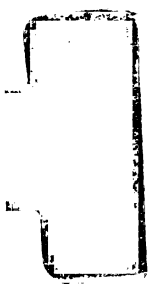
The findings in this section are reported according to the five subscales of the attitude questionnaire (sociological issues, mechanical curiosity, economic, motivational, and human vitalism). For discussion purposes, responses of "strongly agree" and "agree" were combined and reported as agreement; responses of "strongly disagree" and "disagree" were combined and reported as disagreement.

The distribution of responses to **sociological issues** (Items 1-9) is shown in Table 3. Forty-six percent of the respondents agreed with the statement, "I hope that AOT decreases the length of my average work week by 1995." Forty-three percent agreed that "the number of AOT-related crimes will increase between now and 1995," and another 43% agreed with the statement, "I worry about others having access to information about me which is stored on AOT equipment." Forty-one percent of the respondents anticipated an improved major reorganization of most offices by 1995 as a result of AOT, and another 41% were worried about the possibility of their bosses receiving up-to-date information via AOT about their department or their performance before the workers themselves do. Respondents expressed the greatest disagreement with the idea of giving up their private secretary and using an AOT center or cluster of secretaries

Table 3.--Respondents' attitudes toward **sociological** issues regarding AOT (in percent).

Attitude Survey Item	Agreement With Item (in %)						
	SD	D	MD	NO	MA	A	SA
1. I hope that AOT decreases the length of my average work week by 1995.	6	11	7	15	16	22	24
2. I would rather work in an AOT "neighborhood" office closer to my home than go to my regular office every work day.	10	24	20	19	12	11	5
3. AOT is causing health hazards for AOT typists.	7	12	14	13	21	13	20
4. The number of AOT-related crimes will increase between now and 1995.	4	8	11	16	19	21	22
5. I worry about others having access to information about me which is stored on AOT equipment.	8	9	10	14	15	19	24
6. I would rather go to my office every day than work in my home using AOT.	7	13	13	19	16	11	22
7. If I had a private secretary, I would be willing to give up my private secretary and use an AOT (or word processing) center or an AOT cluster of secretaries.	23	22	21	19	7	5	3
8. As a result of AOT, I anticipate an improved major reorganization of most offices by 1995.	6	7	10	17	19	19	22
9. The possibility of my boss receiving up-to-date information via AOT about my department (or about my performance) before I do worries me.	9	16	9	11	14	19	22

Key: SD = Strongly Disagree
D = Disagree
MD = Mildly Disagree
NO = No Opinion/Uncertain
MA = Mildly Agree
A = Agree
SA = Strongly Agree



(45%) and with the idea of working in "neighborhood" office close to their homes rather than going to their regular office every work day (34%).

The distribution of responses to the **mechanical curiosity** issues (Items 10-19) is shown in Table 4. Sixty-three percent of the respondents indicated they would like to have a computer in their homes. Fifty-one percent hoped that the amount of AOT equipment being used in offices would increase significantly by 1995, and 45% agreed that working with AOT is enjoyable. Sixty-nine percent of the respondents disagreed with the statement, "I would not like to have a computer in my office," and 49% disagreed with the statement, "I do not look forward to learning new skills which will help me use AOT."

The distribution of responses concerning **economic** issues (Items 20-29) is shown in Table 5. The strongest agreement was with the statement that "AOT increases the quality of office work" (53%). Also, 49% of the respondents agreed that AOT is significantly increasing the productivity of managers and/or supervisors in offices and that, during the next ten years, all offices will need to use AOT in order to compete effectively. Forty-six percent of the respondents agreed that AOT will be responsible for new, more stimulating positions for entry-level office personnel by 1995. Thirty-nine percent of the respondents disagreed with the statement, "I am concerned that AOT might eliminate a significant number of supervisory and/or middle management positions in companies."

Table 4.--Respondents' attitudes toward **mechanical curiosity** issues regarding AOT (in percent).

	Attitude Survey Item	Agreement With Item (in %)						
		SD	D	MD	NO	MA	A	SA
10.	AOT is a temporary office "fad" that will pass by 1995.	28	23	20	13	8	5	4
11.	Working with AOT is enjoyable.	4	4	7	17	23	21	24
12.	All office personnel should be able to use AOT effectively.	3	6	8	26	22	21	13
13.	I would not like to have a computer in my office.	44	25	21	6	3	1	1
14.	I hope that the amount of AOT equipment being used in offices will increase significantly by 1995.	1	3	4	16	26	25	26
15.	I would like to have a computer in my home.	3	4	4	4	21	37	26
16.	It is difficult to adapt to the type of thinking required by AOT.	18	18	27	22	8	5	2
17.	I do not look forward to learning new skills which will help me use AOT.	32	17	14	26	9	2	1
18.	AOT developments are occurring too rapidly.	13	18	6	7	22	16	18
19.	When I work with AOT, I feel more stressed.	16	11	10	6	14	22	21

Key: SD = Strongly Disagree
D = Disagree
MD = Mildly Disagree
NO = No Opinion/Uncertain
MA = Mildly Agree
A = Agree
SA = Strongly Agree

Table 5.--Respondents' attitudes toward **economic** issues regarding AOT (in percent).

	Attitude Survey Item	Agreement With Item (in %)						
		SD	D	MD	NO	MA	A	SA
20.	By 1995, AOT will be responsible for new, more stimulating positions for entry-level office personnel.	6	7	8	13	20	20	26
21.	During the next ten years, all offices will need to use AOT in order to compete effectively.	3	4	5	16	24	25	24
22.	AOT is significantly increasing the productivity of secretaries and/or clerical office personnel.	3	6	4	13	22	24	28
23.	I am concerned that AOT might eliminate a significant number of supervisory and/or middle management positions in companies.	20	19	18	14	21	6	3
24.	AOT increases office efficiency.	9	6	10	14	18	21	22
25.	I am concerned that AOT might eliminate a significant number of clerical and/or secretarial office positions.	18	14	16	17	15	15	6
26.	AOT is significantly increasing the productivity of managers and/or supervisors in offices.	2	4	4	16	25	23	26
27.	AOT increases the quality of office work.	3	4	5	12	23	26	27
28.	AOT will be responsible for increased salaries for clerical and/or secretarial personnel by 1995.	9	14	23	21	14	13	6
29.	AOT will increase the quality of my job-related decisions.	6	12	16	14	16	17	19

Key: SD = Strongly Disagree
D = Disagree
MD = Mildly Disagree
NO = No Opinion/Uncertain
MA = Mildly Agree
A = Agree
SA = Strongly Agree

The distribution of responses to **motivational** issues (Items 30-41) is shown in Table 6. Forty-seven percent of the respondents were concerned that if they do not learn how to use the new AOT equipment, they may lose promotional opportunities; 46% agreed that AOT is increasing promotional opportunities for middle managers. Forty-five percent of the respondents agreed that AOT increases job pressure for office personnel, and 44% were concerned that AOT is increasing the "assembly-line" atmosphere in some offices. Forty percent of the respondents disagreed with the statement, "It bothers me that more rigid rules need to be followed in offices when AOT is used."

The distribution of responses to **human vitalism** issues (Items 42-49) is shown in Table 7. Forty-two percent of the respondents agreed with the statement, "I hope that AOT will eliminate over 50 percent of all **routine** office tasks by 1995," and 41% agreed that people with knowledge about AOT gain more "power" or influence in the office. Forty-one percent of the respondents disagreed with the statement, "It concerns me that AOT is decreasing the amount of control I have over my work," and 35% disagreed with the statement, "I am concerned that AOT will dramatically change the way I do my job."

Summary. Respondents hoped that AOT would decrease the length of their average work week by 1995. Many thought that the number of AOT-related crimes would increase in the next five years. They worried about others having access to personal information concerning respondents that was stored on AOT equipment.

Table 6.--Respondents' attitudes toward **motivational** issues regarding AOT (in percent).

	Attitude Survey Item	Agreement With Item (in %)						
		SD	D	MD	NO	MA	A	SA
30.	AOT is increasing promotional opportunities for clerical and/or secretarial office personnel.	3	8	15	14	18	24	17
31.	AOT is increasing promotional opportunities for middle managers.	3	4	8	24	15	24	22
32.	I am concerned that AOT is increasing the "assembly-line" atmosphere in some offices.	3	12	15	8	18	22	22
33.	It concerns me that with the increased use of AOT, office personnel spend more time working with AOT equipment and less time working with people.	4	6	11	21	22	21	16
34.	AOT helps make the office a more satisfying place to work.	6	10	13	10	19	18	24
35.	I am concerned that AOT might increase the amount of "power" or influence that management possesses in the office.	4	10	13	18	15	16	24
36.	Office personnel using AOT have more prestige than office personnel who do not use AOT.	5	11	13	16	18	12	26
37.	AOT will increase creativity in offices.	7	11	14	19	18	16	16
38.	AOT increases job pressure for office personnel.	3	10	12	11	14	21	24
39.	It bothers me that more rigid rules need to be followed in offices when AOT is used.	24	16	17	20	13	7	3
40.	I am concerned that if I do not learn how to use the new AOT equipment, I may lose promotional opportunities.	4	8	8	12	21	23	24
41.	Using AOT would make my job easier.	1	3	19	17	19	20	22

Key: SD = Strongly Disagree
D = Disagree
MD = Mildly Disagree
NO = No Opinion/Uncertain
MA = Mildly Agree
A = Agree
SA = Strongly Agree

Table 7.--Respondents' attitudes toward **human vitalism** issues regarding AOT (in percent).

Attitude Survey Item	Agreement With Item (in %)						
	SD	D	MD	NO	MA	A	SA
42. I hope that AOT will eliminate over 50 percent of all routine office tasks by 1995, such as filing, typing mailing labels, stuffing envelopes, etc.	9	9	9	14	17	19	23
43. It concerns me that AOT is decreasing the amount of control I have over my work.	22	19	19	15	11	9	4
44. AOT will **increase** the opportunity for clerical and/or secretarial office personnel to make higher-level decisions in the office.	6	11	11	15	19	20	18
45. AOT will **decrease** the opportunity for supervisors or middle managers to make higher-level decisions in the office.	11	17	19	27	13	9	4
46. People with knowledge about AOT gain more "power" or influence in the office.	4	4	14	19	19	23	18
47. I am concerned that AOT will dramatically change the way I do my job.	13	22	24	22	13	4	2
48. I am worried that AOT will change the skills I need for my job.	16	16	18	13	14	13	8
49. Office personnel will need to change to adapt to AOT more than AOT will adapt to office personnel.	13	15	13	20	14	17	8

Key: SD = Strongly Disagree
D = Disagree
MD = Mildly Disagree
NO = No Opinion/Uncertain
MA = Mildly Agree
A = Agree
SA = Strongly Agree

Most of the respondents would like to have a computer in their homes as well as in their offices. They hoped that the amount of AOT equipment being used in offices would increase significantly by 1995, and they thought that working with AOT is enjoyable. They looked forward to learning new skills that would help them use AOT.

Respondents thought that AOT increases the quality of office work and that AOT is significantly increasing the productivity of office managers and/or supervisors. They agreed that, during the next ten years, all offices will need to use AOT in order to compete effectively. Many respondents agreed that AOT will be responsible for new, more stimulating positions for entry-level office personnel by 1995.

Respondents were concerned that if they do not learn how to use the new AOT equipment, they might lose promotional opportunities; similarly, they agreed that AOT is increasing promotional opportunities for middle managers. Respondents agreed that AOT increases job pressure for office personnel; they also were concerned that AOT is increasing the "assembly-line" atmosphere in some offices. However, they did not agree that more rigid rules need to be followed in offices when AOT is used.

Respondents hoped that AOT would eliminate more than 50% percent of all routine office tasks by 1995. They agreed that people with knowledge about AOT gain more "power" or influence in the office. Respondents were not concerned about AOT decreasing the amount of control they have over their work or about AOT dramatically changing the way they do their jobs.

Research Question 3: The Relationship Between Selected Personal Characteristics and Attitudes Toward AOT Issues

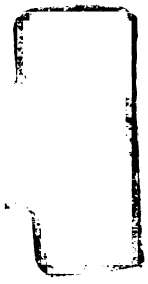
Which of the following personal characteristics are significantly related to the attitudes of office personnel toward AOT issues: age, gender, educational level, socio-economic background, and career aspirations?

The point biserial correlation coefficient was computed to determine whether there was a significant relationship between gender and attitudes toward AOT issues. Pearson product-moment correlation coefficients were computed to determine whether there was a significant relationship between attitudes toward AOT and the remaining personal characteristics.

Tables 8 through 12 show the distribution of respondents in the five job classifications by career aspirations, gender, educational level, age, and socioeconomic background, respectively. With regard to career aspirations (Table 8), respondents in the various job classifications seemed content with their current job classifications, although they were not clear on what their future career goals were.

As shown in Table 9, the general office workers and professional secretaries/administrative assistants were primarily females. The systems analysts, first-line managers/supervisors, and middle managers were predominantly males.

With regard to educational level, the majority of general office workers and professional secretaries/administrative assistants were high school graduates (Table 10). The majority of first-line managers/supervisors were graduates of two-year colleges or had



a business school degree. The majority of systems analysts and middle managers had four-year college degrees.

Table 8.--Distribution of respondents in the five job classifications by career aspirations (relationship of current job to future career goals).

Career Aspiration	Job Classification				
	General Office Worker (n=89)	Prof. Sec./ Admin. Asst. (n=135)	Systems Analyst (n=36)	First-Line Manager/ Superv. (n=69)	Middle Manager (n=31)
Unsure of goals	23	47	17	11	3
Present job meets ultimate goals	66	88	19	58	28

Table 9.--Distribution of respondents in the five job classifications by gender.

Gender	Job Classification				
	General Office Worker (n=89)	Prof. Sec./ Admin. Asst. (n=135)	Systems Analyst (n=36)	First-Line Manager/ Superv. (n=69)	Middle Manager (n=31)
Male	11	17	31	61	30
Female	78	118	5	8	1

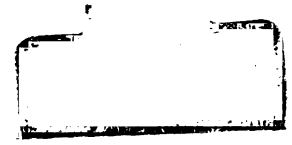


Table 10.--Distribution of respondents in the five job classifications by educational level (highest educational level attained).

Highest Degree	Job Classification				
	General Office Worker (n=89)	Prof. Sec./ Admin. Asst. (n=135)	Systems Analyst (n=36)	First-Line Manager/ Superv. (n=69)	Middle Manager (n=31)
High school graduate	71	98	0	22	2
Two-year college or business school degree	17	27	3	27	17
Four-year college degree	1	10	32	19	12
Graduate degree	0	0	1	1	0

The distribution of respondents by age is shown in Table 11. The majority of general office workers and professional secretaries/ administrative assistants were in the 25-45 year range. On the other hand, the majority of systems analysts, first-line managers/supervisors, and middle managers were in the 36-55 year age range.

The majority of general office workers and professional secretaries/administrative assistants indicated that they came from a lower-middle to lower-lower-class socioeconomic background (Table 12). Systems analysts and middle managers were concentrated in the

lower-middle and upper-lower classes. First-line supervisors had a wider range, with most of them in the upper-middle class.

Table 11.--Distribution of respondents in the five job classifications by age.

Age	Job Classification				
	General Office Worker (n=89)	Prof. Sec./ Admin. Asst. (n=135)	Systems Analyst (n=36)	First-Line Manager/ Superv. (n=69)	Middle Manager (n=31)
25 or under	24	23	0	0	0
26-35	21	46	2	1	2
36-45	29	51	11	28	12
46-55	12	10	19	29	15
56-65	3	5	4	11	2
65 or over	0	0	1	0	1

Table 12.--Distribution of respondents in the five job classifications by socioeconomic background (parents' or guardians' background while respondent was in high school).

Socioeconomic Background	Job Classification				
	General Office Worker (n=89)	Prof. Sec./ Admin. Asst. (n=135)	Systems Analyst (n=36)	First-Line Manager/ Superv. (n=69)	Middle Manager (n=31)
Upper class	0	0	1	1	2
Upper lower	1	1	2	12	3
Upper middle	3	12	7	19	5
Lower middle	31	61	13	11	9
Upper lower	29	32	11	13	11
Lower lower	25	29	0	13	1

A significant relationship was found between attitudes of office personnel toward AOT issues and age, socioeconomic background, and career aspirations (see Table 13). No significant relationship was found between attitudes of office personnel toward AOT issues and gender or educational level.

Table 13.--Correlations between personal characteristics and AOT attitude.

Characteristic	Correlation Coefficient	R Squared	Signif. Level
Career aspirations	.1485	.026	.022*
Gender	-.0983	--	--
Educational level	.0898	.011	.863
Age	-.1297	.103	.001*
Socioeconomic background	.0025	.902	.003*

*Significant at the .05 level.

Correlation coefficients also were computed to determine whether there were significant relationships between the four personal characteristics other than gender and each job-classification group's attitude toward AOT (see Table 14). A significant relationship was found between the age of general office workers, professional secretaries/administrative assistants, and middle managers and their attitudes toward AOT.

Table 14.--Correlations between personal characteristics and AOT attitude, by job classification.

Personal Characteristic	Job Classification									
	General Office Worker (n = 89)		Professional Secretary/ Admin. Asst. (n = 135)		Systems Analyst (n = 36)		1st-Line Manager/ Supervisor (n = 69)		Middle Manager (n = 31)	
	Corr. Coef.	p Value	Corr. Coef.	p Value	Corr. Coef.	p Value	Corr. Coef.	p Value	Corr. Coef.	p Value
Career aspirations	.211	.531	.102	.694	.183	.732	.015	.965	.104	.893
Gender	--	--	--	--	-.122	--	-.041	--	.239	--
Educational level	-.181	.452	-.032	.589	-.347	.473	-.502	.162	.201	.462
Age	-.212	.021*	-.397	.017*	.261	.328	-.028	.641	.145	.024*
Socioeconomic level	-.253	.285	.114	.899	.398	.292	.154	.598	.143	.598

*Significant at the .05 level.

Summary. The respondents in this study were similar to those in Kizzier's study in terms of career aspirations, gender, and age. Differences existed with regard to educational level and socioeconomic level. In the West Virginia study, the respondents' educational and socioeconomic levels were lower than those of respondents in the Nebraska study.

A significant relationship was found between three personal characteristics--age, socioeconomic background, and career aspirations--and attitudes of office personnel toward AOT issues. No significant relationship was found between these attitudes and gender or educational level. In the analyses by job classification, the age of general office workers, professional secretaries/administrative assistants, and middle managers was found to be significantly related to their attitudes toward AOT.

Research Question 4: The Relationship Between Selected Work-Related Characteristics and Attitudes Toward AOT Issues

Which, if any, of the following work-related characteristics are significantly related to the attitudes of office personnel toward AOT issues: tenure, office work experience, industry type, working conditions, supervisory style, job variety, salary equity, work-related social interaction, and discretionary social interaction?

Pearson product-moment correlation coefficients were computed to determine whether there was a significant relationship between attitude toward AOT and the eight work-related characteristics. Correlation coefficients also were computed to determine whether there were significant relationships between the work-related

characteristics and each job-classification group's attitude toward AOT.

A significant relationship was found between attitudes of office personnel toward AOT issues and salary equity and industry type (see Table 15). No significant relationship was found between attitudes of office personnel toward AOT issues and office work experience, tenure, work-related social interaction, discretionary social interaction, working conditions, job variety, or supervisory style.

Table 15.--Correlations between work-related characteristics and AOT attitude.

Characteristic	Correlation Coefficient	R Squared	Signif. Level
Office work experience	.0329	.011	.118
Tenure	-.1135	.008	.098
Work-related social inter.	.1839	.006	.402
Discretionary social inter.	.1782	.002	.784
Working conditions	.0192	.062	.097
Salary equity	-.2398	.026	.021*
Job variety	.0983	.019	.291
Industry type	.5724	.002	.005*
Supervisory style	.1763	.021	.103

*Significant at the .05 level.

Correlation coefficients also were computed to determine whether there were relationships between the work-related characteristics and each job-classification group's attitude toward AOT (see Table 16). Significant relationships were found between

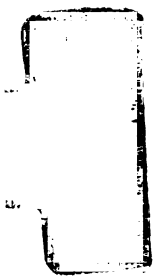


Table 16.--Correlations between work-related characteristics and AOT attitude, by job classification.

Work-Related Characteristic	Job Classification									
	General Office Worker (n = 89)		Professional Secretary/ Admin. Asst. (n = 135)		Systems Analyst (n = 36)		1st-Line Manager/ Supervisor (n = 69)		Middle Manager (n = 31)	
	Corr. Coef.	p Value	Corr. Coef.	p Value	Corr. Coef.	p Value	Corr. Coef.	p Value	Corr. Coef.	p Value
Office work experience	.263	.311	.125	.019*	.231	.198	.121	.926	.042	.621
Tenure	-.219	.217	-.119	.132	.000	.329	.000	.997	.132	.229
Work-related social inter.	.143	.231	.334	.645	.223	.321	.431	.728	.132	.223
Discretionary social inter.	-.231	.324	.113	.352	-.357	.923	.823	.232	.321	.221
Working conditions	.021	.235	.125	.542	.732	.012*	.232	.112	.023	.126
Salary equity	.012	.321	.323	.221	.021	.023*	-.231	.123	.332	.012*
Job variety	-.012	.231	.023	.763	.223	.539	.748	.332	.533	.017*
Industry type	.238	.302	.294	.012*	.225	.093	.335	.436	.403	.335
Supervisory style	.532	.465	.335	.653	.265	.544	-.234	.254	.376	.432

*Significant at the .05 level.

the office work experience and the industry type of professional secretaries/administrative assistants and their attitudes toward AOT. Significant relationships also were found between the working conditions and salary equity of systems analysts and their attitudes toward AOT. In addition, significant relationships were found between the salary equity and job variety of middle managers and their attitudes toward AOT.

Summary. Attitudes of office personnel toward AOT issues were found to be significantly related to salary equity and industry type. Attitudes of office personnel toward AOT issues were not found to be related to office work experience, tenure, work-related social interaction, discretionary social interaction, working conditions, job variety, or supervisory style. In the analysis by job classification, significant relationships were found between the office work experience and the industry type of professional secretaries/administrative assistants and their attitudes toward AOT; between the working conditions and salary equity of systems analysts and their attitudes toward AOT; and between the salary equity and job variety of middle managers and their attitudes toward AOT.

Research Question 5: The Relationship Between Selected AOT-Related Characteristics and Attitudes Toward AOT Issues

Which, if any, of the following AOT-related characteristics are significantly related to the attitudes of office personnel toward AOT issues: AOT knowledge, AOT experience, AOT operation, and involvement in AOT decision making?

Pearson product-moment correlation coefficients were computed to determine whether there was a significant relationship between attitude toward AOT and the four AOT-related characteristics. Correlation coefficients also were computed to determine whether there were significant relationships between the AOT-related characteristics and each job-classification group's attitude toward AOT.

A significant relationship was found between attitudes of office personnel toward AOT issues and AOT knowledge (see Table 17). No significant relationship was found between attitudes of office personnel toward AOT issues and AOT experience, AOT decision-making participation, or AOT operation interaction.

Table 17.--Correlations between AOT-related characteristics and AOT attitude.

Characteristic	Correlation Coefficient	R Squared	Signif. Level
AOT knowledge	.4025	.152	.000*
AOT experience	.2093	.102	.241
AOT decision-making participation	-.0231	.002	.248
AOT operation interaction	.0482	.007	.275

*Significant at the .05 level.

Correlation coefficients also were computed to determine whether there were significant relationships between the AOT-related characteristics and each job-classification group's attitude toward

AOT (see Table 18). Significant relationships were found between AOT knowledge and the attitudes of general office workers and systems analysts toward AOT. Significant relationships also were found between AOT decision-making participation and AOT operation interaction and the attitudes of professional secretaries/administrative assistants toward AOT.

Summary. Attitudes of office personnel toward AOT issues were found to be significantly related to AOT knowledge. However, attitudes toward AOT issues were not significantly related to AOT experience, AOT decision-making participation, or AOT operation interaction. In the analysis by job classification, significant relationships were found between AOT knowledge and the attitudes of general office workers and systems analysts toward AOT, and between AOT decision- making participation and AOT operation interaction and the attitudes of professional secretaries/administrative assistants toward AOT.

Research Question 6: Differences in AOT Attitudes Among the Job-Classification Groups

Are there significant differences among the five classifications of office personnel with regard to their attitudes toward AOT issues?

Using ANOVA, it was found that general office workers' attitudes toward AOT issues differed significantly (at the .05 level) from those of workers in the other job-classification groups (see Table 19). The attitudes of the general office workers toward AOT issues were significantly more negative than those of the other four groups.

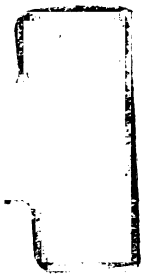


Table 18.--Correlations between AOT-related characteristics and AOT attitude, by job classification.

AOT-Related Characteristic	Job Classification									
	General Office Worker (n = 89)		Professional Secretary/ Admin. Asst. (n = 135)		Systems Analyst (n = 36)		1st-Line Manager/ Supervisor (n = 69)		Middle Manager (n = 31)	
	Corr. Coef.	p Value	Corr. Coef.	p Value	Corr. Coef.	p Value	Corr. Coef.	p Value	Corr. Coef.	p Value
AOT knowledge	.324	.021*	.428	.065	.231	.000*	.211	.893	.034	.075
AOT experience	-.239	.223	.286	.213	.012	.232	.232	.443	.032	.211
AOT decision-making partic.	.123	.432	.112	.000*	.143	.432	.224	.122	.192	.321
AOT operation interaction	-.242	.332	-.325	.032*	.135	.147	.364	.113	.631	.124

*Significant at the .05 level.

Table 19.--Results of the analysis of variance: AOT attitudes by job-classification group.

Source	Sum of Squares	Mean Squares	F-Ratio	F-Prob.
Between groups	12.8394	4.2051	11.9078	.05*
Within groups	74.2058	.8723		
Total	87.0452			

*Significant at the .05 level.

Summary. The ANOVA test indicated that there was a significant difference in AOT attitudes among the five job-classification groups. Specifically, general office workers had significantly more negative attitudes toward AOT issues than did personnel in the other four job classifications.

Summary

Results of the data analyses were discussed in this chapter. Chapter V contains a summary of the findings, conclusions drawn from the findings, implications for educational practice, recommendations for further research, and the researcher's reflections.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, RECOMMENDATIONS, AND REFLECTIONS

Summary

The technological revolution that is taking place in American business offices is changing the methods and procedures used in businesses throughout the United States. These changes are expected to encompass all functions involved in the processing and communication of information and will affect managerial workers as well as secretarial and clerical support personnel.

Research conducted on the subject of office automation has dealt mainly with the effect of automation on support personnel, namely correspondence and administrative secretaries and their immediate supervisors. However, whereas a number of researchers have focused on the effects of automation on support personnel, little research has been done on the attitudes of managerial personnel toward advanced office technology. The present study was undertaken to address that problem. Specifically, this study was intended to contribute to the body of knowledge related to workers' attitudes toward advanced office technology.

The primary purpose of this study was to analyze the attitudes of five classifications of office personnel toward specific issues

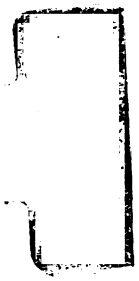
concerning the use of advanced office technology (AOT). An additional purpose was to determine whether selected demographic, work-related, and AOT-related factors were related to subjects' attitudes toward AOT. A further purpose was to ascertain whether subjects in the five job classifications differed in their attitudes toward AOT.

This research was a replication of a 1985 study completed by Donna Kizzier at the University of Nebraska-Lincoln. Kizzier studied the attitudes of five categories of office personnel in Nebraska toward advanced office technology. She sought to determine whether relationships existed between workers' attitudes and selected demographic characteristics, and whether there was a difference in attitudes among workers in the five job categories.

The sample for this study included (a) 89 general office workers, (b) 135 professional secretaries/administrative assistants, (c) 36 systems analysts, (d) 69 first-line managers/supervisors, and (e) 31 middle managers. These employees' responses to the attitude scale and demographic data sheet were the source of the data analyzed in this study.

Findings

The major findings for each of the research questions posed in this study are as follows:



Research Question 1. What is the overall attitude of each of the five classifications of office personnel toward advanced office technology (AOT) issues?

Middle managers had the most positive attitude toward AOT, followed closely by first-line managers/supervisors. Next were systems analysts, general office workers, and professional secretaries/administrative assistants, in that order. Systems analysts had the lowest standard deviation in means, followed by supervisors, middle managers, general office workers, and secretaries, in that order.

Research Question 2: What are the attitudes of the total sample of office personnel toward specific AOT issues?

Respondents hoped that AOT would decrease the length of their average work week by 1995. Many thought that the number of AOT-related crimes would increase in the next five years, and they worried about others having access to information about them that was stored on AOT equipment.

Most of the respondents would like to have a computer in their homes as well as in their offices. They hoped that the amount of AOT equipment being used in offices would increase significantly by 1995, and they thought that working with AOT is enjoyable. They looked forward to learning new skills that would help them use AOT.

Respondents thought that AOT increases the quality of office work and that AOT is significantly increasing the productivity of office managers and/or supervisors. They agreed that, during the next ten years, all offices will need to use AOT in order to compete effectively. Many respondents agreed that AOT will be responsible

for new, more stimulating positions for entry-level office personnel by 1995.

Respondents were concerned that if they do not learn how to use the new AOT equipment, they might lose promotional opportunities; similarly, they agreed that AOT is increasing promotional opportunities for middle managers. Respondents agreed that AOT increases job pressure for office personnel; they also were concerned that AOT is increasing the "assembly-line" atmosphere in some offices. However, they did not agree that more rigid rules need to be followed in offices when AOT is used.

Respondents hoped that AOT would eliminate more than 50% percent of all routine office tasks by 1995. They agreed that people with knowledge about AOT gain more "power" or influence in the office. Respondents were not concerned about AOT decreasing the amount of control they have over their work or about AOT dramatically changing the way they do their jobs.

Research Question 3: Which of the following personal characteristics are significantly related to the attitudes of office personnel toward AOT issues: age, gender, educational level, socioeconomic background, and career aspirations?

A significant relationship was found between three personal characteristics--age, socioeconomic background, and career aspirations--and attitudes of office personnel toward AOT issues. No significant relationship was found between these attitudes and gender or educational level. In the analyses by job classification, the age of general office workers, professional secretaries/

administrative assistants, and middle managers was found to be significantly related to their attitudes toward AOT.

Research Question 4: Which, if any, of the following work-related characteristics are significantly related to the attitudes of office personnel toward AOT issues: tenure, office work experience, industry type, working conditions, supervisory style, job variety, salary equity, work-related social interaction, and discretionary social interaction?

Attitudes of office personnel toward AOT issues were found to be significantly related to salary equity and industry type but not to office work experience, tenure, work-related social interaction, discretionary social interaction, working conditions, job variety, or supervisory style. In the analysis by job classification, significant relationships were found between the office work experience and the industry type of professional secretaries/administrative assistants and their attitudes toward AOT; between the working conditions and salary equity of systems analysts and their attitudes toward AOT; and between the salary equity and job variety of middle managers and their attitudes toward AOT.

Research Question 5: Which, if any, of the following AOT-related characteristics are significantly related to the attitudes of office personnel toward AOT issues: AOT knowledge, AOT experience, AOT operation, and involvement in AOT decision making?

Attitudes of office personnel toward AOT issues were found to be significantly related to AOT knowledge. However, attitudes toward AOT issues were not significantly related to AOT experience, AOT decision-making participation, or AOT operation interaction. In the analysis by job classification, significant relationships were found between AOT knowledge and the attitudes of general office

workers and systems analysts toward AOT, and between AOT decision-making participation and AOT operation interaction and the attitudes of professional secretaries/administrative assistants toward AOT.

Research Question 6: Are there significant differences among the five classifications of office personnel with regard to their attitudes toward AOT issues?

The ANOVA test indicated that there was a significant difference in AOT attitudes among the five job-classification groups. Specifically, general office workers had significantly more negative attitudes toward AOT issues than did personnel in the other four job classifications.

Conclusions

Overall attitudes of office personnel in this study were positive. It appeared that the most positive attitudes were held by respondents in the managerial and professional job classifications. Secretaries had the most deviation in attitudes.

Most office personnel in all occupational categories thought that AOT would improve their working life and make the tasks more interesting. They recognized that there would be a loss of jobs in each category, but that there would be new job classifications emerging.

Office workers thought that AOT would increase their productivity. Frustrations were stated concerning the need for better and more frequent training by the employer.

The older the respondents, the more negative were their attitudes toward AOT. With increased educational levels came more positive attitudes toward AOT.

AOT involves not only word processing but various tasks that necessitate interaction among different people, machines, software programs, and varied work-place situations. AOT works best when the workers using the technologies have a positive attitude.

Although improving the skills of secretaries will help to increase productivity and improve efficiency in offices, all groups of AOT users need to be trained to use modern technology efficiently and to best advantage for increased productivity in the AOT function. There is a critical need for increased office productivity because office costs are rising 12% to 15% a year, and businesses cannot sustain those increased costs without dramatically increasing office productivity.

The attitudes of office workers in this study can be helpful in attempting to increase office productivity through staff development. Whenever technology is changed or upgraded, office workers must be trained or retrained. For educators to better prepare AOT personnel for careers in automated business offices, curricula need to be revised to reflect the changing nature of the office.

Various concerns identified by a majority of respondents in each job classification explain some of the less positive attitudes of general office workers. These included potential job loss, increased monotony, increased isolation, increased pressure on the

job, decreased opportunities for promotion, decreased job-related decision-making ability, and a general lack of training with AOT. These factors caused job-related stress that made working less enjoyable.

Implications for Educational Practice

1. Office workers of the future must acquire the knowledge and develop the skills and work habits involved with AOT that will enable them to become productive employees. This mission is best accomplished in an environment characterized by strong instructional leadership, high expectations for success of all office workers, an emphasis on teaching and learning, a safe and orderly school environment, frequent monitoring of student progress, and effective home-school communication. The use of current technology to enhance delivery of the education curriculum is imperative.

2. Educational facilities must use current technology to prepare office workers for the twenty-first century. West Virginia businesses have the potential to be recognized for leading-edge research, programs, and facilities in educational technologies such as microcomputers, interactive videodiscs, satellite transmission, and electronic networking.

3. In classrooms of the future, an effort must be made to provide the academic and vocational preparation for those potential office workers who want to prepare for careers in using AOT. Multimedia is an evolving interactive teaching tool for educators and trainers, in which the computer is used to create presentations

and/or lessons that have audio tracks, visual images, and text/information combined. All layers of multimedia begin with one simple connection--between a VCR and a computer--designed to give people control over disks full of words, sounds, and images while creating a new medium for education, entertainment, and the dissemination of all kinds of information. Training facilities must use these technologies.

4. Interactive video instruction improves achievement by about 38% and reduces time-to-competency by 31% over more conventional instruction. Interactive instruction systems, especially those combining videodisc and computer resources, are gaining widespread acceptance within educational and training communities. The term "interact" means that the computer and learner must interact, or exchange information, for the program to continue.

5. Multimedia provides a quantum leap in education by personalizing the information revolution. It gives office workers the chance to become excited about learning. In this flourishing information age, in which the world's information base doubles every three years, educators must find ways to communicate this knowledge to office workers. Multimedia is the best way to communicate, so employers must be willing to use the computer in this progressive way for the benefit of employees.

Recommendations

The findings from this study indicated that there is a need for better training and retraining among the West Virginia public employees who participated in this study. The retraining crisis that is facing these employees is reflected throughout the United States. This crisis has also caused businesses to reevaluate training methods and attitudes. Because technology is being applied to improve the productivity of countless workers in every industry, the automation of American companies, which was slow to get under way, is now moving forward and is beginning to spread beyond manufacturing to many other fields.

American businesses already spend an estimated $35 billion each year on training, and that figure will grow as automation and computerization continue to redefine job requirements. Also, managers need to realize that learning must be a continuous part of any profession if organizations and individuals are to keep up with the rate of change in technology.

In West Virginia, it is imperative that the following ideas be included in planning for training and development of workers involved with advanced office technology.

1. The technological needs of West Virginia businesses are changing in the 1990s. These changes are occurring because businesses must be competitive in a global marketplace. Therefore, schools at all levels have changed to accommodate the needs of businesses. For example, keyboarding is now taught in most elementary schools in West Virginia because, in ALL jobs for these

future workers, a computer will be used to perform tasks. The computer is now considered a literacy tool. In addition, 1980s technology is now outdated (256K is no longer enough). The IBM standard is obsolete because IBM moved to micro-channel technology. IBM is no longer "IBM compatible."

2. Magcard machines and stencil or spirit duplicators are now office dinosaurs. They must be replaced with copiers (perhaps color) that reduce and enlarge, reproduce copy on the front and back of a page, sort, staple, produce multiple sets at one time, and receive fax and/or computer information directly.

3. Word-processing programs should communicate audibly with their human operators. They should also be programmed to anticipate what the operator will need during each work session.

4. Phonetic shorthand such as the Gregg system is now defunct; alphabetic systems such as Superwrite should take its place. Also, most newer word-processing packages that include their own "shorthand" utilities with each program should be used. These shorthand utilities are actually macro keys that are programmed to perform detailed tasks with a few key strokes.

Access to postsecondary AOT education is the main need of West Virginia students and workers. West Virginia's economic growth requires an increase in the number of citizens with postsecondary AOT education. The strength of the state's economy is directly affected by the percentage of the available workforce possessing college degrees or an advanced vocational-technical education from

which an employer might draw. This is critical because the percentage of high school graduates in West Virginia who go directly to college is lower than in most other states. Also, the percentage of West Virginians 25 years of age and older with at least a four-year college degree is the lowest of the 50 states.

West Virginia's citizens need a higher level of education to be competitive and attractive in a worldwide job market that requires a higher level of skills than in the past. Most jobs that pay well are likely to require a postsecondary education. One way to accomplish this goal is to expand awareness of postsecondary AOT educational opportunities available in West Virginia and to enhance the motivation among the state's citizens to take full advantage of available opportunities. Another means is to improve academic preparation to ensure that students enrolling in postsecondary education programs are adequately prepared to be successful in their selected areas of study. In addition, there must be support to help residents of West Virginia overcome financial barriers to higher education.

It is necessary to create a "student-friendly" and "technology-friendly" environment within postsecondary educational institutions to encourage and expand participation by the increasingly diverse student population. It also must be remembered that there is a need to increase the sensitivity of higher education to West Virginia's economic demographics.

The understanding of attitudes of personnel in automated offices could be included in courses required of high school,

community college, and collegiate business students. Whenever a technological change is to be implemented that will affect an AOT function, all workers should be forewarned and provided with preimplementation training so that no one is surprised when the change is implemented. When the change has been implemented, thorough training should be available to the workers involved.

Reflections

The results of this study will be helpful to the West Virginia State Department of Education in revising the curriculum for office occupation programs. The findings will also be a key part of the revision of the undergraduate business education curriculum of the Marshall University College of Education. The research also has been helpful in restructuring the graduate programs in the Marshall University Department of Adult and Technical Education. As tech-prep programming is implemented in West Virginia, this research is being used to design programming in the areas of cooperative training, apprenticeship programs, and school-to-work transition programs.

APPENDICES

APPENDIX A

ATTITUDE SCALE AND DEMOGRAPHIC DATA SHEET

ATTITUDES OF OFFICE PERSONNEL TOWARD ADVANCED OFFICE TECHNOLOGY

"Advanced Office Technology" (AOT) is defined in this study as:

The use of electronic equipment to receive, process, store, and transmit information (data and/or words) within and between business offices. Data processing, personal computing, word processing, micrographics, reprographics, information processing, telecommunications are all components of Advanced Office Technology. Advanced Office Technology is abbreviated as AOT.

Instructions

THE ABOVE DEFINITION OF "ADVANCED OFFICE TECHNOLOGY" SHOULD BE USED IN ANSWERING THE FOLLOWING QUESTIONS. THE INITIALS "AOT" WILL REPRESENT THE WORDS "ADVANCED OFFICE TECHNOLOGY."

THE STATEMENTS IN THIS QUESTIONNAIRE REFLECT SOME OF THE ISSUES THAT OFFICE PERSONNEL HAVE IDENTIFIED ABOUT THE USE OF AOT. PLEASE INDICATE YOUR AGREEMENT TO EACH OF THE STATEMENTS AS ILLUSTRATED IN THE FOLLOWING SAMPLE STATEMENTS.

The following degrees of **Agreement** should be used in answering questions:

-3 Strongly Disagree		+1 Mildly Agree
-2 Disagree	0 No Opinion/Uncertain	+2 Agree
-1 Mildly Disagree		+3 Strongly Agree

Example Statements	**Agreement**
a. By 1995, 85% of all U.S. workers will commute to work by using mass transit systems. (The respondent agreed with this statement and circled the +2 in the agreement column to the left. A +3 would have indicated strong agreement, and a +1 would have indicated mild agreement.)	-3 -2 -1 0 +1 +2 +3
b. By 2000, new energy technology will reduce the average West Virginia homeowner's heating bills by more than 50%. (The respondent strongly disagreed with this statement and circled the -3 in the agreement column. A -2 would have indicated disagreement and a -1 would have indicated mild agreement.)	-3 -2 -1 0 +1 +2 +3
c. By 2000, part of California will fall into the ocean. (The respondent has no opinion regarding this issue, so the 0 was circled.)	-3 -2 1- 0 +1 +2 +3

The following degrees of **Agreement** should be used in answering questions:

-3 Strongly Disagree		+1 Mildly Agree
-2 Disagree	0 No Opinion/Uncertain	+2 Agree
-1 Mildly Disagree		+3 Strongly Agree

Issues	**Agreement**
1. I hope that AOT decreases the length of my average work week by 1995.	-3 -2 -1 0 +1 +2 +3
2. I would rather work in an AOT "neighborhood" office closer to my home than go to my regular office every work day.	-3 -2 -1 0 +1 +2 +3
3. AOT is causing health hazards for AOT typists (such as eye strain, increased work stress, noise, back/neck strain, increased radiation, etc.)	-3 -2 -1 0 +1 +2 +3
4. The number of AOT-related crimes will increase between now and 1995.	-3 -2 -1 0 +1 +2 +3

5.	I worry about others having access to information about me which is stored on AOT equipment.	-3 -2 -1 0 +1 +2 +3
6.	I would rather go to my office every day than work in my home using AOT.	-3 -2 -1 0 +1 +2 +3
7.	If I had a private secretary, I would be willing to give up my private secretary and use either an AOT (or word processing) center or an AOT cluster of secretaries.	-3 -2 -1 0 +1 +2 +3
8.	As a result of AOT, I anticipate an improved major reorganization of most offices by 1995.	-3 -2 -1 0 +1 +2 +3
9.	The possibility of my boss receiving up-to-date information via AOT about my department (or about my performance) before I do worries me.	-3 -2 -1 0 +1 +2 +3

10.	AOT is a temporary office "fad" that will pass by 1995.	-3 -2 -1 0 +1 +2 +3
11.	Working with AOT is enjoyable.	-3 -2 -1 0 +1 +2 +3
12.	All office personnel should be able to use AOT effectively.	-3 -2 -1 0 +1 +2 +3
13.	I would **not** like to have a computer in my office.	-3 -2 -1 0 +1 +2 +3
14.	I hope that the amount of AOT equipment being used in offices will increase significantly by 1995.	-3 -2 -1 0 +1 +2 +3
15.	I would like to have a computer in my home.	-3 -2 -1 0 +1 +2 +3
16.	It is difficult to adapt to the type of thinking required by AOT.	-3 -2 -1 0 +1 +2 +3
17.	I do not look forward to learning new skills which will help me use AOT.	-3 -2 -1 0 +1 +2 +3
18.	AOT developments are occurring too rapidly.	-3 -2 -1 0 +1 +2 +3
19.	When I work with AOT, I feel more stressed.	-3 -2 -1 0 +1 +2 +3

20.	By 1995, AOT will be responsible for new, more stimulating positions for entry-level office personnel.	-3 -2 -1 0 +1 +2 +3
21.	During the next ten years, all offices will need to use AOT in order to compete effectively.	-3 -2 -1 0 +1 +2 +3
22.	AOT is significantly increasing the productivity of secretaries and/or clerical office personnel.	-3 -2 -1 0 +1 +2 +3
23.	I am concerned that AOT might eliminate a significant number of supervisory and/or middle management positions in companies.	-3 -2 -1 0 +1 +2 +3
24.	AOT increases office efficiency.	-3 -2 -1 0 +1 +2 +3
25.	I am concerned that AOT might eliminate a significant number of clerical and/or secretarial office positions.	-3 -2 -1 0 +1 +2 +3
26.	AOT is significantly increasing the productivity of managers and/or supervisors in offices.	-3 -2 -1 0 +1 +2 +3
27.	AOT increases the quality of office work.	-3 -2 -1 0 +1 +2 +3
28.	AOT will be responsible for increased salaries for clerical and/or secretarial personnel by 1995.	-3 -2 -1 0 +1 +2 +3
29.	AOT will increase the quality of my job-related decisions.	-3 -2 -1 0 +1 +2 +3

30. AOT is increasing promotional opportunities for clerical and/or secretarial office personnel. -3 -2 -1 0 +1 +2 +3

31. AOT is increasing promotional opportunities for middle-managers. -3 -2 -1 0 +1 +2 +3

32. I am concerned that AOT is increasing the "assembly-line" atmosphere in some offices. -3 -2 -1 0 +1 +2 +3

33. It concerns me that with the increased use of AOT, office personnel spend more time working with AOT equipment and less time working with people. -3 -2 -1 0 +1 +2 +3

34. AOT helps make the office a more satisfying place to work. -3 -2 -1 0 +1 +2 +3

35. I am concerned that AOT might increase the amount of "power" or influence that management possesses in the office. -3 -2 -1 0 +1 +2 +3

36. Office personnel using AOT have more prestige than office personnel who do not use AOT. -3 -2 -1 0 +1 +2 +3

37. AOT will increase creativity in offices. -3 -2 -1 0 +1 +2 +3

38. AOT increases job pressure for office personnel. -3 -2 -1 0 +1 +2 +3

39. It bothers me that more rigid rules need to be followed in offices when AOT is used. -3 -2 -1 0 +1 +2 +3

40. I am concerned that if I do not learn how to use the new AOT equipment, I may lose promotional opportunities. -3 -2 -1 0 +1 +2 +3

41. Using AOT would make my job easier. -3 -2 -1 0 +1 +2 +3

---

42. I hope that AOT will eliminate over 50 percent of all routine office tasks by 1995, such as filing, typing mailing labels, stuffing envelopes, etc. -3 -2 -1 0 +1 +2 +3

43. It concerns me that AOT is decreasing the amount of control I have over my work. -3 -2 -1 0 +1 +2 +3

44. AOT will increase the opportunity for clerical and/or secretarial office personnel to make higher-level decisions in the office. -3 -2 -1 0 +1 +2 +3

45. AOT will decrease the opportunity for supervisors or middle managers to make higher-level decisions in the office. -3 -2 -1 0 +1 +2 +3

46. People with knowledge about AOT gain more "power" or influence in the office. -3 -2 -1 0 +1 +2 +3

47. I am concerned that AOT will dramatically change the way I do my job. -3 -2 -1 0 +1 +2 +3

48. I am worried that AOT will change the skills I need for my job. -3 -2 -1 0 +1 +2 +3

49. Office personnel will need to change to adapt to AOT more than AOT will adapt to office personnel. -3 -2 -1 0 +1 +2 +3

The above statements indicate some concerns that office personnel have expressed about the increased use of AOT. Do you have any additional concerns about AOT? If so, please list them below.

PLEASE FILL OUT THE ATTACHED PASTEL DATA SHEET NEXT.

****

THANK YOU FOR YOUR TIME AND EFFORT. PLEASE FILL OUT THE PASTEL SHEETS THAT FOLLOW, THEN PLACE BOTH THIS QUESTIONNAIRE AND THE WHITE SHEETS FROM QUESTIONS 1-49 IN THE ENCLOSED POSTAGE-PAID ENVELOPE AND RETURN IT BY: **May 15, 1991.**

TO: PROFESSOR ROBERT KRIEBEL
PROJECT DIRECTOR
413 HARRIS HALL
HUNTINGTON, WV 25701

DEMOGRAPHIC DATA SHEET

****

YOUR ANSWERS TO THE FOLLOWING QUESTIONS WILL BE USED TO COMPARE VIEWS EXPRESSED BY PEOPLE WITH DIFFERENT TYPES OF WORK EXPERIENCES. **PLEASE ANSWER EACH OF THE FOLLOWING QUESTIONS BY PLACING AN "X" IN THE BLANK TO THE LEFT OF THE STATEMENT WHICH BEST ANSWERS EACH QUESTION. CHECK ONLY ONE LETTER FOR EACH QUESTION. ALL ANSWERS WILL BE KEPT STRICTLY CONFIDENTIAL.**

****

50. How would you describe your AOT background?

____a. I had no idea what AOT was before seeing this questionnaire.
____b. I have heard and/or read about AOT, but have never worked on AOT equipment.
____c. I have worked with AOT equipment, but not as often as once a week.
____d. I work with and/or read about AOT as a regular part of my job (at least once a week).
____e. I work with or read about AOT every work day.
____f. Other (please specify): _____

51. How many years have you worked in an office? (Include present and past years of experience in offices.)

____a. 0-2 years
____b. 3-5 years
____c. 6-10 years
____d. 11-15 years
____e. 16-19 years
____f. 20 or more years

52. How many years have you worked for your present company?

____a. 0-2 years
____b. 3-5 years
____c. 6-10 years
____d. 11-15 years
____e. 16-19 years
____f. 20 or more years

53. How many times during your typical work day do you talk to other employees or customers/clients? Do not include lunch or coffee breaks. Count only **business-related** conversations by phone or in person.

____a. 0-2 times
____b. 3-5 times
____c. 6-10 times
____d. 11-15 times
____e. 16 or more times

54. How many times during your typical work day do you talk to other employees or customers/clients? Do not include lunch or coffee breaks. Count only **non-business related** conversations by telephone or in person.

____a. 0-2 times
____b. 3-5 times
____c. 6-10 times
____d. 11-15 times
____e. 16 or more times

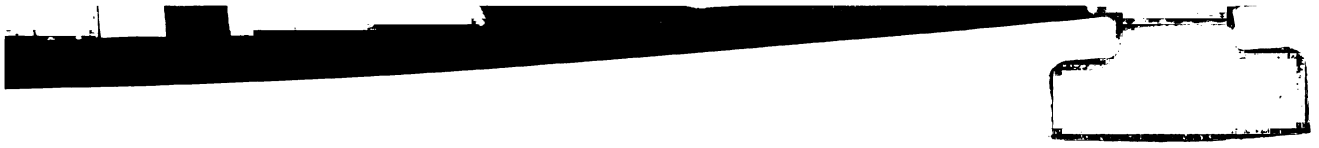
55. How does your present job relate to your future career goals?

____a. I am not sure what my future career goals are
____b. My present job is not at all in line with my future career goals
____c. My present job may indirectly help me reach my future career goals
____d. My present job will directly help me reach my future career goals
____e. My present job meets my ultimate career goals

56. Have you ever worked in an organization that used AOT equipment?

____a. Yes
____b. No
____c. Not sure

IF YOUR ANSWER TO QUESTION 56 WAS "NO" OR "NOT SURE", SKIP TO QUESTION 61.
IF YOUR ANSWER TO NUMBER 56 WAS "YES", CONTINUE WITH QUESTION 57.



57. How many year(s) did you work in an office(s) while it was using AOT equipment?

___a. 0-1 years
___b. 2-4 years
___c. 5-7 years
___d. 8-10 years
___e. More than 10 years

58. To what extent did you participate in making the decision to obtain AOT equipment?

___a. Not involved in decision to purchase AOT equipment
___b. Was **not** asked to participate, but offered an opinion which was **not** considered
___c. Was asked to participate, but opinion was **not** considered
___d. Was **not** asked to participate, but offered an opinion which **was** considered
___e. **Was** asked to participate, and opinion **was** considered
___f. Played a major role in making the decision

59. Have you directly operated AOT equipment?
___a. Yes
___b. No

IF YOUR ANSWER TO QUESTION 59 WAS "YES", ANSWER QUESTION 60.
IF YOUR ANSWER TO QUESTION 59 WAS "NO", SKIP TO QUESTION 61.

60. How many years have you operated AOT equipment?

___a. 0-1 years
___b. 2-4 years
___c. 5-7 years
___d. 8-10 years
___e. More than 10 years

61. Which of the following best describes your present overall working conditions:

___a. Excellent
___b. Good
___c. Fair
___d. Poor

62. How fair do you feel your salary is in relationship to your work responsibilities?

___a. Excellent salary relative to work responsibilities
___b. Good salary relative to work responsibilities
___c. Average salary relative to work responsibilities
___d. Poor salary relative to work responsibilities

63. Approximately how many different major duties do you perform during a typical work day?

Examples: Lee contacts clients by telephone, dictates correspondence, attends meetings, supervises staff, and conducts research. (This would be 5 major duties.)

Kelly answers the telephone, places telephone calls for a supervisor, types correspondence, and files. (This would be 4 major duties.)

Pat transcribes documents which come into a Word Processing Center. (This would be 1 major duty.)

___a. 1-3 major duties each day
___b. 4-6 major duties each day
___c. 7-9 major duties each day
___d. 10-12 major duties each day
___e. 13 or more major duties each day

64. Indicate your gender:
___a. Male
___b. Female

65. Indicate your highest educational degree attained:

___a. high school diploma
___b. 2-year college or business school degree
___c. 4-year college degree
___d. graduate degree(s)

66. Which of the following best describes the type of company in which you work.

___a. manufacturing
___b. education
___c. insurance
___d. finance/banking
___e. retail/wholesale
___f. advertising
___g. health care
___h. legal
___i. utilities
___j. government
___k. publishing
___l. research/consulting
___m. service
___n. other (please indicate)_____

67. What managerial style best describes your immediate supervisor?

___a. does not listen to or use employees' suggestions
___b. listens to, but does not generally use employees' suggestions
___c. listens to, and sometimes uses employee's suggestions
___d. regularly involves employees in decision making and often uses employees' suggestions

68. Indicate your age:

___a. 25 or under
___b. 26-35
___c. 36-45
___d. 46-55
___e. 56-65
___f. 65 or over

69. Which of the following best describes your parents' (or guardians') social status while you were in high school?

___a. upper-upper class
___b. lower-upper class
___c. upper-middle class
___d. lower-middle class
___e. upper-lower class
___f. lower-lower class

70. Which **one** of the following job descriptions most accurately describes your present position?

___a. **General Office Worker:** Completes one or more routine tasks assigned by supervisors, such as operating office machines, operating word processors, filing, typing, keypunching, and posting.

___b. **Professional Secretary/Administrative Assistant:** Supports managers/administrators by completing routine administrative duties and possibly supervising general office personnel.

___c. **Systems Analyst:** Plans efficient methods of processing data, handling results, and using various techniques to analyze problems and design new systems.

___d. **First-line Supervisor or Junior Manager/Administrator:** Translates organizational policies and goals into reality, deals directly with other employees to see that schedules and quality are maintained.

___e. **Middle-level Manager/Administrator:** Interprets organizational policies and goals in specialized areas, such as finance, accounting, production, sales, personnel, etc; analyzes and summarizes data to aid in decision making.

___f. **Other** (please list job title and/or major responsibilities): _____

_____

_____

****

YOU ARE NOW FINISHED WITH THE QUESTIONNAIRE AND DATA SHEET. PLEASE CHECK TO SEE THAT YOU HAVE ANSWERED ALL QUESTIONS ON BOTH THE WHITE AND THE PASTEL FORMS, THEN PLACE BOTH FORMS IN THE POSTAGE-PAID ENCLOSED ENVELOPE.
THANK YOU FOR YOUR TIME AND INTEREST.

****

RETURN BY **May 15, 1990** TO: PROFESSOR ROBERT KRIEBEL
PROJECT DIRECTOR
Marshall University
413 Harris Hall
Huntington, WV 25701

Table A1.--Item analysis of attitude scale.

Item	Sub-scale	Mean Diff.	Std. Dev.	Total Corr.	Partial Corr.[a]
1	1	5.080	1.539	.258	.398
2	1	4.141	1.867	.387	.513
3	1	4.910	1.515	.321	.496
4	1	4.960	1.381	.119	.438
5	1	4.821	1.740	.201	.501
6	1	4.114	1.958	.298	.523
7	1	3.246	1.868	.312	.398
8	1	4.744	1.400	.468	.523
9	1	3.060	1.596	.181	.297
10	2	3.935	1.364	.230	.486
11	2	5.538	1.424	.514	.596
12	2	6.159	1.046	.429	.663
13	2	3.776	1.753	.243	.326
14	2	6.035	1.181	.402	.621
15	2	6.296	1.250	.398	.612
16	2	2.915	1.889	.103	.298
17	2	3.670	1.510	.301	.491
18	2	2.914	1.624	.142	.304
19	2	4.920	1.733	.652	.641
20	3	4.891	1.333	.429	.495
21	3	5.985	1.185	.644	.731
22	3	5.945	1.078	.628	.702
23	3	3.642	1.523	.392	.449
24	3	6.030	1.131	.487	.631
25	3	4.095	1.757	.349	.452
26	3	5.204	1.488	.617	.621
27	3	5.871	1.176	.623	.741
28	3	4.678	1.543	.622	.631
29	3	5.333	1.274	.491	.598
30	4	4.824	1.465	.148	.328
31	4	4.762	1.343	.653	.669
32	4	3.965	1.519	.527	.592
33	4	4.468	1.533	.204	.297
34	4	5.000	1.265	.583	.561
35	4	3.442	1.382	.285	.429
36	4	4.682	1.378	.427	.434
37	4	5.214	1.449	.599	.713
38	4	3.893	1.655	.386	.432
39	4	3.532	1.425	.285	.436
40	4	4.294	1.819	.513	.624
41	4	5.935	1.209	.542	.599

Table A1.--Continued.

Item	Sub-scale	Mean Diff.	Std. Dev.	Total Corr.	Partial Corr.[a]
42	5	5.806	1.099	.521	.602
43	5	3.000	1.622	.261	.449
44	5	4.363	1.626	.402	.607
45	5	3.328	1.436	.403	.598
46	5	4.910	1.446	.449	.561
47	5	3.308	1.614	.226	.491
48	5	3.214	1.658	.235	.491
49	5	5.021	1.530	.498	.601

Key: Subscale 1 = Sociological Issues
Subscale 2 = Mechanical Curiosity Issues
Subscale 3 = Economic Issues
Subscale 4 = Motivational Issues
Subscale 5 = Human Vitalism Issues

[a]It was assumed that partial correlations should average between .400 and .600, with higher correlations being more reliable than lower ones.

APPENDIX B

CORRESPONDENCE

University of Nebraska Lincoln

Business Education Program
Department of Vocational and Adult Education
527 Nebraska Hall
Lincoln, NE 68588-0515
Telephone: (402) 472-2221

December 11, 1990

Dr. Bob Poland
Michigan State University
304 Erickson Hall
East Lansing, MI 48824

Dear Dr. Poland:

Robert Kriebel contacted me recently with a question regarding the sample group for his doctoral study.

This letter is to support his intention to sample personnel from the West Virginia State governmental structure rather than using the professional organization surveyed in my study. In my opinion, the replication will remain intact if the five personnel categories sampled in my study are surveyed.

If you have any additional questions, do not hesitate to contact me. I am pleased to be able to assist with the effort to replicate my doctoral dissertation.

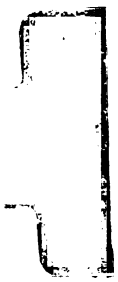
Sincerely,

Donna Kizzier
Assistant Professor

DK:bh

Enclosure: Memorandum from Robert Kriebel

cc: Robert Kriebel



MICHIGAN STATE UNIVERSITY

OFFICE OF VICE PRESIDENT FOR RESEARCH
AND DEAN OF THE GRADUATE SCHOOL

EAST LANSING • MICHIGAN • 48824-1046

April 4, 1991

Mr. Robert Kriebel
1039 Marigold
East Lansing, MI 48823

RE: ATTITUDES OF OFFICE PERSONNEL TOWARDS ADVANCED OFFICE TECHNOLOGY, IRB#91-135

Dear Mr. Kriebel:

The above project is exempt from full UCRIHS review. I have reviewed the proposed research protocol and find that the rights and welfare of human subjects appear to be protected. You have approval to conduct the research.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval one month prior to March 31, 1992.

Any changes in procedures involving human subjects must be reviewed by the UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,

David E. Wright

David E. Wright, Ph.D.
Chair, UCRIHS

DEW/deo

cc: Dr. Robert Poland

MEMORANDUM

TO: West Virginia State Government Workers

FROM: Robert Kriebel

DATE: April 10, 1991

SUBJECT: QUESTIONNAIRE FORM

The need to understand the attitudes of office personnel toward advanced office technology is important to teachers and trainers. The demand to develop advanced office technology skills will become a necessity as we enter the next century.

This study will analyze attitudes of office personnel toward advanced office technology so future training may be most beneficial for office personnel and employers.

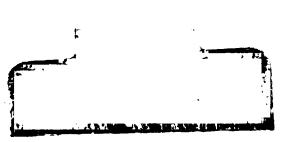
During the study, no risks are involved. All results will be treated with strict confidence. Data collected will be analyzed as a group--not as individuals.

Your participation in this study is strictly voluntary and would be greatly appreciated to assist me in analyzing the attitudes of office personnel toward advanced office technology. By signing this form, you indicate your agreement to participate in this research. Thank you.

_____ _____

Signature Date

PLEASE ENCLOSE THIS FORM WITH YOUR QUESTIONNAIRE.



FOLLOW-UP POSTAL CARD

April 24, 1991

Dear WV State Employee:

RE: QUESTIONNAIRE RETURN

A questionnaire was mailed to you two weeks ago. We have not yet received the questionnaire on DETERMINING THE PERCEIVED ATTITUDES OF OFFICE PERSONNEL TOWARD ADVANCED OFFICE TECHNOLOGY.

Your response is important to the success of the survey. Won't you please take a few minutes to complete the questionnaire.

Sincerely,

Robert Kriebel
Principal Investigator

Marshall University
413 Harris Hall
Huntington, WV 25701

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