

A STUDY OF SELECTED OKLAHOMA CITY AND
TULSA, OKLAHOMA, BUSINESSES TO
ASSESS COMPETENCIES NEEDED
BY FUTURE EMPLOYEES IN
AUTOMATED OFFICES

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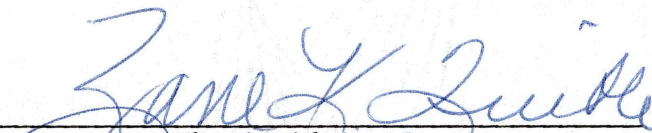
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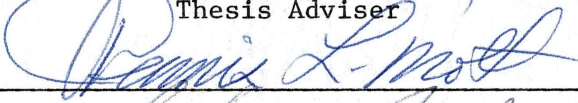
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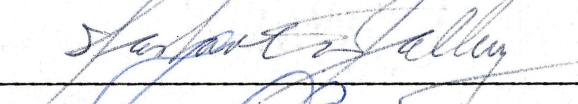


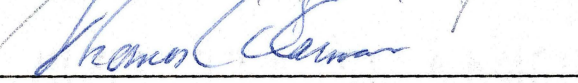
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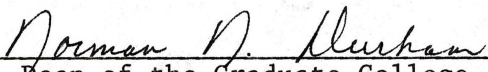
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CHAPTER 1

INTRODUCTION

Automated processing of information is having a revolutionary impact on the structure and operation of the office. Organizations are continually challenged to develop efficient procedures for managing the flow of written and verbal information. Changing and emerging technologies contribute to the need for constant review of information management.

Consulting and research firms have provided assistance to the business community by conducting surveys and studies designed to provide data for making decisions about the handling and the flow of information. These studies have provided sources of data for use in the selection of equipment and the implementation of information systems for business and industry as well as for educational agencies.

The educational community must maintain current and accurate data to use as the basis for reviewing and developing relevant curricular offerings for those being trained to work in automated offices. Research studies provide valuable sources for that data. This study concentrates on automated functions in business, industry, and governmental agencies located in the two major metropolitan areas in Oklahoma.

Oklahoma City is the capital of the state of Oklahoma, housing the legislative, judicial, and governing bodies as well as the agencies

involved in state and federal government operations. The city is considered a center for agricultural activity. Major banking institutions are located in Oklahoma City, along with major manufacturing concerns. Tinker Air Force Base is located within the metropolitan area. Oklahoma City, which occupies the largest land area of any city in the state, has several large local governmental and educational agencies and institutions.

Tulsa, recognized as an energy center for the state and region, has several company home offices located within the city. Two large private collegiate institutions as well as a large junior college are located in the area. The city ranks 38th in the nation in population but 20th in the concentration of office headquarters for major companies. These offices maintain major computer centers with heavy concentration in the data/information processing area. Aviation and aerospace are also leading industries. The Port of Catoosa located nearby provides important water transportation capabilities.

Both locations are served by major commercial airlines as well as by major commercial trucking companies. Major medical facilities are also located in both areas. These two metropolitan areas provided a solid foundation for the study of automated offices because of their diverse bases of business and industry having national and international linkages.

Statement of the Problem

This study was designed to assess the competencies required of future employees performing technical functions in automated offices.

The positions studied are below management level; and the competencies studied are those of a technical nature, not personal attributes such as initiative, dedication, and loyalty.

Purpose of the Study

The purpose of this study was to supply information for developing innovative, relevant curriculum for the automated office field. Research concerned with attitudes, characteristics, traits, and skills needed by the office employees in word processing and data processing has been conducted. However, educators as well as business people need information concerning technological changes in office equipment, information origination, dissemination, retrieval systems, and office organization. The continuing incorporation of new technology within the business office necessitates periodic review of the changes made as they relate to competencies needed by effective employees.

Need for the Study

Administrators and instructors in educational institutions providing training experiences for future employees who will work in automated offices are becoming increasingly concerned about the competencies needed by their students. A review of related research did not provide the desired information about the competencies needed by those employees.

Planning curriculum to train students for work in the rapidly changing technological field of office automation puts an emphasis on reaching needed competency levels. Individuals in the business

community representing organizations using various automated office functions can play an integral role in identifying these competencies. Educational advisory committees comprised of business men and women provide valuable input about training needs, equipment selection, attitudes, and office organization that affects curriculum development and changes.

Delimitations

The following are delimitations of this study:

1. This study was not designed to assess the sociological, psychological, or personal traits needed by office employees.
2. This study was not designed to assess user satisfaction with either the equipment or the brand of equipment used.
3. The population from which the participants for this study were drawn was limited to the membership of the Oklahoma City and the Tulsa chapters of the Administrative Management Society and the Data Processing Management Association.

Limitations

This study as designed and conducted was limited by the following:

1. The study may be limited because it excludes those firms which have implemented or are developing automated offices but which do not have employees holding current membership in AMS or DPMA.
2. Even though the people responding to the questionnaire have comparable titles and positions, their responsibilities may differ from one another. This phenomenon may affect their responses.

3. The respondents may interpret questions differently, which may also affect their responses.

Operational Definitions of the Variables

The design of this study has thirty-two dependent variables and four independent variables.

The dependent variables are categorized as follows:

Five Automated Equipment or Function Usages:

1. Word processing
2. Data processing
3. Reprographics
4. Records Management
5. Telecommunications

Twenty-seven Competencies:

1. Communicating orally
2. Receiving those who come to the office
3. Communicating via telephone
4. Filing alphabetically
5. Filing numerically
6. Spelling accurately
7. Punctuating accurately
8. Using grammar correctly
9. Composing messages
10. Proofreading copy/screens
11. Using reference sources
12. Keyboarding
13. Typewriting

14. Formatting documents
15. Transcribing from machine dictation
16. Transcribing from shorthand dictation
17. Using legible penmanship
18. Performing math calculations
19. Performing recordkeeping and/or bookkeeping activities
20. Operating applicable equipment
21. Handling maintenance of applicable equipment
22. Selecting applicable software
23. Using applicable software
24. Handling communication between various types of electronic equipment
25. Accessing databases
26. Updating databases
27. Programming

The independent variables are:

1. Location--operationally defined as Oklahoma City or Tulsa, Oklahoma.
2. Organizational structure--operationally defined as intrastate and interstate.
3. Type of organization--operationally defined as the following five categories: financial oriented, service, computer oriented, energy, and other.
4. Size--operationally defined as three size categories, 0 - 49 employees, 50 - 299 employees, and 300+ employees.

Hypotheses

The following hypotheses were tested as a part of this study:

1. There are no significant differences between business offices in Oklahoma City and Tulsa and the use of the following automated functions:
 - a. Word processing
 - b. Data processing
 - c. Reprographics
 - d. Records management
 - e. Telecommunications
2. There are no significant differences between the organizational structure and the use of the following automated functions:
 - a. Word processing
 - b. Data processing
 - c. Reprographics
 - d. Records management
 - e. Telecommunications
3. There are no significant differences between various types of business organizations and the use of the following automated functions:
 - a. Word processing
 - b. Data processing
 - c. Reprographics
 - d. Records management
 - e. Telecommunications
4. There are no significant differences between the size of the business organization and the use of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

5. There are no significant differences between Oklahoma City and Tulsa and the perceived importance of competencies needed by future office employees in each of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

6. There are no significant differences among respondents in the various types of business organizations and the perceived competencies needed by future office employees in each of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

Definition of Terms

For the purpose of this study, the following definitions of terms were used:

Automated Office. The office workplace where the identification and integration of automated technologies to facilitate information management is taking place.

Competency. The level of understanding and application needed to perform a specific task.

Administrative Management Society. An international professional organization, which is composed of management-level individuals from member companies and firms, that provides information, ideas, and assistance directed toward company and organizational decision and policy makers.

Data Processing Management Association. An international professional organization, which is composed of individuals involved in the study, development, and operation of data processing equipment and systems for their respective organizations.

Office Curriculum. The instructional program developed to provide training for individuals leading to employment in office and office-related occupations.

Advisory Committee. A group of individuals representing business, industry, education, and the local community organized for the purpose of providing information, recommendations, and assistance to educators for developing relevant instructional programs.

Presentation of the Study

The remaining chapters address, in a comprehensive and systematic manner, the analysis of the data for this study.

Chapter 2 presents a review of the literature related to the problem. The review, which served as the basis for this research study,

is presented in the following seven sections:

1. Overview of Office Environment
2. Data Processing
3. Word Processing
4. Reprographics
5. Records Management
6. Telecommunications
7. Integration of Technologies

Chapter 3 describes the methodology and procedures used in conducting the study.

Chapter 4 provides the analysis of the data gathered as a result of the study.

Chapter 5 contains the summary of the study, the conclusions that can be drawn, and the recommendations for future consideration.

CHAPTER 2

REVIEW OF LITERATURE

The processing of information is the basis for the major functions in the operation of offices in today's business world. The increasing emphasis upon producing, collecting, analyzing, storing, retrieving, and disseminating information makes the equipment and functions involved with that processing very important to overall productivity within the organization. The competencies needed to perform those functions are essential to effective performance in office occupations.

Literature concerning equipment, functions, and technology for the office was reviewed for this study. The information gathered through that review is presented in the following seven sections:

1. Overview of Office Environment
2. Data Processing
3. Word Processing
4. Reprographics
5. Records Management
6. Telecommunications
7. Integration of Technologies

Overview of Office Environment

"The office is an information world where facts are generated, revised, analyzed, and filed--for better or worse. It is also a world where presentation of these facts is a continuous requirement" (Lesser and Martin, 1983, p. 69). The office environment is not static. New and emerging technology constantly brings about evolutionary as well as revolutionary changes.

Office automation will enable many types of employees to perform their jobs more easily and with greater efficiency than ever before....automated systems will also enable employees to attain levels of productivity that are not attainable with many of the procedures and operations found in the majority of today's offices (Quible, 1983, p. 22).

The "widespread" use of word processing and the introduction of electronic mail systems are cited as evidence of the oncoming revolution of office automation....In the late sixties, the term (office automation) referred to the application of computers to well-structured, high-volume office tasks such as payroll processing, accounts payable, and purchasing. In its present reincarnation, "office automation" refers to the application of computer technology, communications technology, system science, and behavioral science to the vast majority of less structured office functions which have not been amenable to traditional data processing technology (Zisman, 1978, p. 1-2).

The 1980s have seen the office move from word processing to information processing, which includes word, text, data, mail, typesetting, and micrographics processing. (Witbeck, 1983)

The stand-alone word processing system and the computer now are capable of communicating with each other. Electronic mail and document distribution can be handled on either system without reliance on a central source. Other functions that can be added to the total network are files, records management, calendaring, phototypesetting, master-file inquiry, and personalized reports (Campbell, 1983).

"Office automation is the use of computers and communications technology to provide both information and information-handling services directly to office workers," according to Martin (1982, p. 38). Whether or not the automated office is a dream or reality may depend upon the ability of the office workers to adjust to and operate the various types of new equipment coming into the marketplace (Friedman, 1982).

Chorafas (1982, p. 16) indicates that "the objective of office automation is to apply computer power to the costly and time-consuming paperwork problem." He further states that "paper has dominated the office for centuries." That paper handling includes six phases: the creation of a document; the document's physical or logical presence; the document's distribution within the firm; its storage; its retrieval; and its distribution external to the firm.

Curran and Mitchell (1982) indicate that several pieces of equipment form the basis of information technology: the electric typewriters and word processors, electrostatic photocopiers, electronic computers, electronic calculators, and telephones.

Approximately 22 percent of the labor force in the United States is involved in office work (Schantz, 1983). The Department of Commerce indicates that more than 60 percent of all people employed in the United States perform some activities related to information processing in their jobs (Lake, 1983).

According to Arntson (1983), the 1980s will see the rising need for office workers. People will need basic keyboarding skills since most typing, drafting, editing, and verifying will likely be done at a computer terminal or a word processing station.

Many organizations now see the need to move toward the automated office if they expect to stem the rising tide of office costs and still process the growing work loads facing them (Zisman, 1978).

The automation of office functions, often based on computerization, has developed piecemeal. The automated components have appeared when a direct or related need was identified. The increase in information production and exchange demands faster and more efficient methods of processing and distribution.

Data Processing

Although Hollerith developed an electromechanical data processing machine in the 1800s, the first business-use computers were not installed until the 1950s. The late 1950s and early 1960s saw the development of the more reliable mainframe computer. The use of that computer has created a demand for trained personnel in the various phases of electronic data processing (Sapre and Perritt, 1976).

Drum (1980, p. 46) states that "by the mid-1960s many of the earlier unit record installations had been replaced by electronic equipment in larger businesses." Today, with the microprocessor chips, the small-business user can obtain a low-cost system for in-house use.

Drum (1980) identified input media as punched cards, punched tape, disks, optical character readers (OCR), magnetic ink characters (MICR), direct input (keyboards), and audio input. He further identified some of the output media as printed lines, punched cards, punched paper tape, magnetic tape, video (CRT), microfiche, and audio. The central processing unit (CPU) is identified as an electronic filing cabinet that controls the processing routines, performs the arithmetic functions, and

maintains a quickly accessible memory. Johnson's study (1976) identified many tasks performed by data processing personnel utilizing that equipment.

Microcomputers use a wide range of input, output, and storage devices; however, a CRT/keyboard is standard equipment. Magnetic tape cassette units, floppy disks, printing terminals, and line printers can be interfaced. The microcomputer can also be interfaced with a larger system which permits the micro to become an intelligent terminal.

Haugen (1982) found that a majority of small businesses surveyed in her study were currently using computerized data processing, with a high percentage having in-house data processing capabilities. A large number of those small businesses had computers with less than 256K bytes of primary storage, which is considered in the micro family. Her study found that those businesses employ computer operators and data processing clerks to handle their work load.

Lambrecht (1980) identified keypunches, data entry units, interactive terminals, remote job entry stations, minicomputers, voice-response units, and OCR devices as being the data processing counterparts of typewriters, calculators, and dictation devices. She further identified automatic storage and filing systems for tapes, cards, disks, printouts, and computer-output microfilm and microfiche as being the data processing counterparts of manual filing systems.

In short, the administrative office services functions will continue to become more intimately connected with business data processing functions. Long-range predictions are that administrative services may become part of data processing in some firms (Lambrecht, 1980, p. 166).

Word Processing

Communicating information through the written word remains a major function in the office. Claffey (1979) found that the function of word processing was the producing of quality typewritten copy from handwritten and dictated material in an efficient and timely manner.

Ettinger (1982) indicated that automated equipment is used to perform that function. Therefore, some form of typewriting was identified as a basic function in the production of information documents.

The evolution of the typewriter has provided office workers with a major office tool. "The early typewriter was a large, cumbersome machine. The operators, known then as type writers, could not see what the machine printed unless they removed the paper. The carriage was returned by a foot treadle" (Mason, 1979, p. 2).

During the 1920's, the electric typewriter was introduced. This machine increased operating speed, improved the appearance of the work produced, and reduced the effort required.... About the same time, an automatic typewriter was designed for repetitive work such as billing, posting, invoicing, and turning out form letters. These automatic machines used a perforated paper tape resembling a piano roll....No revisions were possible (Mason, 1979, p. 3).

By the early 1950's, modern versions of electric typewriters were being used in offices as well as typewriting classrooms in the United States. The real breakthrough in typewriter automation came in 1961. In that year, IBM placed the selectric typewriter on the market....This unique design was the basic mechanical form upon which the text-editing machines were built....The first of these text-editing machines was produced in the United States by IBM in 1964. It was the Magnetic Tape Selectric Typewriter, or MTST (Mason, 1979, p. 4).

The Magnetic Card Selectric Typewriter, or MCST, was introduced in 1969, offering a wide variety of correction and revision features. The

MCST was simpler to operate than its predecessor, the MTST (Mason, 1979).

Various forms of automated text-editing equipment evolved until the CRT or video display terminal came into its own in the 1970s, combined with multifunction software-based equipment. Various functions of the office could be performed using the sophisticated word processing equipment (Boucher, 1983).

Several studies have supported the statement that automated word processing is a major office function (Moody, 1978, and Murranka, 1979). Myatt (1982) identified word processing functions and data processing functions that have similar task relationships.

Anderson (1980) indicates that there is no question today that word processing is here to stay. Advanced technology, such as satellite communications, bubble memory, fiber optic cable transmission, laser impact printers, plasma display, voice creation and voice recognition, and portable keyboards, is moving from discussion topics to realities in the world of word processing. Anderson (1980, p. 65) also indicates that "word processing and data processing have already joined forces in an effort to increase the productivity and efficiency of the office."

Reprographics

The reproduction of documents through the technologies of photocopying, facsimile, electronic copiers/printers, laser-intelligent copiers, phototypesetting, offset printing, and duplicating, and typewriting is a major function in the automated office. These processes are not necessarily new to the office. Facsimile has been popular since the 1960s (Popyk, 1983).

Word processing equipment and computerization are making some of these functions more efficient and economical. Arntson (1983, p. 12) indicates that "the computer often assists the word processing equipment with document functions such as photocomposition and computer output microfilm (COM.)"

Records Management

"The basic concept of records management involves the control of recorded information from the original creation to the ultimate disposition--which may be either permanent retention or destruction" (Bennett, 1980, p. 97). According to Popyk (1983), the central records area in large companies often has automated or electronic equipment to speed the process of storing, updating, and retrieving information. Such equipment may include cameras, mechanical filing systems, COM recorders, readers, reader-printers, photocopiers, and even microcomputers.

Bennett (1980, p. 100) reports that "research is being done with holographic and laser technology whereby one million pages of documentation can be stored in an area the size of a sugar cube." He further indicates that the most significant contemporary development in micrographics is COM--Computer Output Microfilm, where data are fed into the computer and processed directly onto the film medium.

Ettinger's study (1982) indicated that specific knowledge about electronic data processing, photocomposition, and graphics was not top priority. However, the future projections of word processing personnel as well as implications from literature reviews indicate that word processing is moving toward integration with data processing,

photocomposition, and telecommunications, with some companies having already reached that level.

Telecommunications

Linkages with organizations and data bases will provide maximum effectiveness in handling information processing. "Although the paperless office may be years away--if it ever comes--certainly the office of tomorrow will be well equipped with electronic communication devices" (Hyslop, 1980, p. 130). This equipment has the capabilities to allow information processing to occur outside of the typical office setting.

The physical environment of the office will be located in several remote locations but still connected through a variety of easy-to-use communication channels.... Coordination of information will be possible through remote locations, using telephone/computer lines (Hyslop, 1980, p. 130).

Polizzano indicates that

An optical character recognition (OCR) system can be invaluable in tackling potential difficulties relating to the input and formatting of messages and the interfacing of different types of word and data processors or other business communications equipment (1983, p. 31).

Computer-based message systems include

Existing in-house computer terminals that provide the electronic mail (EM) function over internal private networks, local area networks, and external networks. A related linkage involves remote computing and message time-sharing services (Polizzano, 1983, p. 31).

One of the fastest growing aspects of telecommunications has been computer message traffic. Digital techniques provide opportunity for the integration of advanced microelectronically controlled peripheral devices, such as new types of exchanges, answering machines, and other parts of the network structure (Curran and Mitchell, 1982).

Integration of Technologies

Hobson (1981) found that emerging office systems technologies are in use and their use will increase. The integration of word processing and data processing as well as the use of shared-logic, photocomposition, intelligent copiers, electronic mail, desk-top terminals for principals, OCR, micrographics, and telecommunication are to play a more prominent role in the automated office.

The Johnson (1983) study found that the following automated activities, in addition to word processing, are occurring regularly within companies: maintaining inventories, maintaining a database, telecommunicating, processing records, and typesetting. Some office systems have evolved through the development of applications based on word processing functions designed to meet specific needs within the organization. One avenue to office systems technology is finding and automating the necessary although often undesirable information processing work handled by end users.

Office jobs are becoming more specialized and more sophisticated with advancing technology. Changing technology in the areas of computers, word processing equipment, and telephone systems are requiring new skills in order to perform the needed functions. More and more jobs will be done by machines interacting with each other, such as the recording and storing of information on microfilm and microfiche or direct storage on computers. Records management and microfilm processing are being directly affected (Maxwell and O'Hare, 1980).

Some experts and consultants in the field of office automation indicate that interconnection and communication are key elements in the development and success of the concept of the "office of the future"

(Blackmarr, 1983). He states that

Without effective interconnection in the office, we will continue to operate as "islands of technology"--either having duplicate data (numeric or textual) or lacking necessary information (p. 23).

One answer to this concern is the local area network (LAN). The cost of this type of connection has dropped so that it may now be considered as a feasible component in the automation plans. According to Blackmarr, a local area network is "a communication linkage that does not require the use of public or long-distance communication facilities (telephone lines, data lines, or satellite communications)" (1983, p. 23).

Virtually all of the modern word processing and text-editing terminals today provide multifunctional use through software and communications. Word processing terminals can emulate computers (with CP/M), key-to-tape or on-line data input terminals, Telex stations, COM and typesetting input and editing terminals, or electronic mail stations (Boucher, 1983).

The need for more than one dedicated duty to be performed on a terminal is referred to as multifunctionality. Terminals may function off-line as text processors and on-line as computer terminals when information needs to be gathered, edited, stored, retrieved, and distributed, and when all or some of the same information needs to be processed by a central computer. The terminals or remote operating systems can adapt to the host--to the protocols supported by the CPU--to "emulate" data processing terminals and thus be "transparent" to the host computer system (Boucher, 1983).

"The traditional separateness among technologies is blurring as data processing can be handled on word-processing equipment and vice

versa" (Connell, 1983, p. 110). Micrographics equipment can interface with word and data equipment as can electronic mail and telecommunications. These functions are among the growing number that must be grouped under information technology as an umbrella term.

Connell (1983) cites another trend, that which "involves interconnection of business technologies through telecommunications networks" (p. 111). He foresees the formation of a basis of new organization structures. "Information is the primary product of the office and the medium with which the technologies work...in acquiring, manipulating, storing, retrieving, and disseminating information" (Connell, 1983, p. 111).

Summary

Predictions for the future indicate that a major portion of the labor force will be involved with the processing of information. Traditionally, the office has been the management center for information. Because of changing and emerging technology, the functions performed in the handling of that information are being automated.

Automated office functions may be classified according to the following categories: data processing, word processing, reprographics, records management, and telecommunications. Each function represents a major responsibility of the personnel within the office structure. The extent to which automation is occurring in each of those areas will have major implications for training of future office workers and the competency levels they should achieve.

Therefore, the performance of these automated functions and the use of related technology in the office merit study and review.

CHAPTER 3

METHODOLOGY AND PROCEDURES

Because rapidly changing technology affects the way information is handled in Oklahoma's business offices, business educators must review and assess needs periodically to determine the competencies businesses require of their office employees. From the data this type of research yields and from its analysis, curriculum can be developed that will enable students to develop the relevant competencies needed to perform office work functions.

Development of the Research Questionnaire

The questionnaire was developed to obtain data to analyze the status and extent of the automation of office equipment and/or functions and the competencies needed for the use of that automation in selected businesses and organizations in Oklahoma City and Tulsa. The following recommendations from Hillestad (1975, pp. 42-60) were followed in developing a valid, reliable questionnaire that encourages responses:

1. Visualize the respondents.
2. Group together questions dealing with each aspect of the study.
3. Arrange questions in either a psychological or logical order.
4. Make apparent that the questions are related to the purpose of the study.

5. Use an easy-to-answer format.
6. Prepare dummy tables of your anticipated responses.
7. Design an attractive questionnaire.
8. Supply clear, complete directions.
9. Try out your questions.
10. Write a good cover letter and follow-up reminders.

The questionnaire requested the title of the respondent and the company's name as a part of the information in the study. An identification number was assigned to each questionnaire for use in the follow-up mailing.

The identification of the automated office equipment and/or functions was based on an intensive review of literature, visits in business and industrial companies, and consultation with vendors. Each item was identified as not being used, used for specified lengths of time, and/or plans for adding that item.

The questionnaire was designed to yield information in the following areas:

- Location of the Respondent's Business Organization
- Organizational Structure
- Type of Business Activity
- Number of Individuals Employed Locally in the Organization
- Types of Automated Office Equipment and/or Functions and Length

of Time Used in the Following Categories:

1. Word Processing
2. Data Processing
3. Reprographics
4. Records Management

5. Telecommunications

- Levels of Importance for 27 Competencies as They Relate to the Five Categories of Automated Office Functions

The competency profile developed for Vocational Business and Office Education in Oklahoma was used as the source for the listing of competencies needed by office employees to perform automated office functions in each of the five categories for this study.

The survey instrument designed to gather data for this study was a four-page questionnaire based on an intensive review of related literature, similar questionnaires, visits in business and industrial companies, and consultation with vendors and business educators. The researcher made a series of revisions after review and consultation with various business educators in Oklahoma, including faculty at Oklahoma State University. The pilot questionnaire was printed on 8½-by-11-inch white paper and stapled in the upper left corner. (A copy of the pilot questionnaire appears as Appendix B of this study.)

Preparation of the Cover Letter

A letter was prepared to accompany the questionnaire, explain the study, and request participation in the study. The letter was designed to interest the recipients in the study and to get cooperation in the return of the completed questionnaire.

Each letter was individually prepared in business-letter format on a word processor, using letterhead stationery of the College of Business Administration, Oklahoma State University. The letters were co-signed by the dissertation advisor, Dr. Zane K. Quible.

The cover letter, which appears as Appendix A of this study, was mailed with the study questionnaire to the pilot group.

Selection of the Pilot Study Group

The pilot group for the research questionnaire included two members from each chapter of the following organizations: Oklahoma City Administrative Management Society, Oklahoma City Data Processing Management Association, Tulsa Administrative Management Society, and Tulsa Data Processing Management Association. A 50 per cent response rate was achieved from the pilot group; follow-up telephone calls to those not responding revealed that the work schedules of two individuals prevented response, and two individuals had moved and could not be reached. After reviewing the pilot questionnaire responses, the researcher made further revisions that facilitated the ease of responding to the questionnaire.

Selection of the Study Sample

The population for this study consisted of the membership of the Oklahoma City Chapters and the Tulsa Chapters of the Administrative Management Society and the Data Processing Management Association. The researcher contacted each chapter president, explained the proposed research study, and requested the current membership list for use in the study. Each of the four chapters provided the current membership list for use in the study.

The four membership lists were combined and numbered consecutively. After the numbers one through nine were placed on slips of paper, the slip on which the number three appeared was drawn. Using Chao's Random

Digits Table, every third number was selected until 400 members for the study sample were drawn.

Collection of the Data

Each of the individuals randomly selected for the study sample were mailed the following items on January 17, 1984:

1. A cover letter individually prepared on the word processor.
2. A four-page questionnaire.
3. A self-addressed stamped envelope for return of the questionnaire to the researcher.
4. A form for name and address to request the study results.

February 1, 1984, was the deadline requested for the return of the study questionnaire.

(The cover letter and questionnaire for this mailing appear as Appendix C and Appendix D respectively of this study.)

A follow-up cover letter (Appendix E) was prepared by the researcher to encourage participation in the study. The individuals who had not yet responded by the February 1, 1984, deadline were mailed the follow-up cover letter, a second copy of the study questionnaire, a self-addressed stamped return envelope, and a form to request the study results. The follow-up was mailed on February 5, 1984, and a deadline return date of February 20, 1984, was suggested.

In an effort to secure a maximum return rate, a second follow-up mailing using a memorandum (Appendix F) was sent on February 20, 1984, to those from whom no response had been received. The deadline of February 27, 1984, for this return was requested.

Based on the formula recommended by Dillman (1978), the response rate of 64.08 per cent was achieved. Dillman's formula is as follows:

$$\text{Response rate} = \frac{\text{Number returned}}{\text{Number in sample} - (\text{noneligibles} + \text{nonreachables})} \times 100$$

$$\text{Response rate} = \frac{223 \text{ returned}}{400 \text{ respondents} - (30 \text{ noneligible} + 22 \text{ nonreachable})} \times 100$$

Statistical Analysis of the Data

The data obtained from the returned questionnaires were keyed into the terminal and processed through the computer facilities at Oklahoma State University.

The Statistical Package for the Social Sciences, Release X, (SPSSx) computer program package was utilized to process the data. Chi-square was selected as the method of statistical analysis to study the nature of the relationships between the independent and dependent variables. This statistic was used because the measures of the dependent variables were at a nominal level and a nonparametric statistical technique was necessary to test that the responses in the dependent variable area were not dependent on the following independent variables: location, structure, type, and size of business organization. The chi-square test of independence was one of the strongest nonparametric tests appropriate to test the hypotheses posed. The level of significance for the rejection of the hypotheses of no significant relationships was set at the .05 level.

After the data were collected, recorded, and reviewed, the researcher determined the necessity of combining several categories

within some of the independent and dependent variables in order to meet the cell-size requirements for a chi-square test of independence.

The four independent variables were reconstituted as follows:

1. The two categories for location of organization remained the same:
 - a. Oklahoma City
 - b. Tulsa
2. The nine categories for structure of organization were combined into the following two categories:
 - a. Intrastate
 - b. Interstate
3. The sixteen categories for type of organization were combined into the following five categories:
 - a. Financial oriented
 - b. Service
 - c. Computer related
 - d. Energy
 - e. Other
4. The six categories for size of organization were combined into the following three categories:
 - a. 0 - 49 employees
 - b. 50 - 299 employees
 - c. 300+ employees

The alternatives for the dependent variables were combined into the categories identified as follows:

1. The five categories for automated word processing equipment or function usage were combined into the following two categories:

- a. Do use
- b. Do not use

2. The five categories for automated data processing equipment or function usage were combined into the following two categories:

- a. Do use
- b. Do not use

3. The five categories for automated reprographics equipment or function usage were combined into the following two categories:

- a. Do use
- b. Do not use

4. The five categories for automated records management equipment or function usage were combined into the following two categories:

- a. Do use
- b. Do not use

5. The five categories for automated telecommunications equipment or function usage were combined into the following two categories:

- a. Do use
- b. Do not use

6. The six categories relating to perceived importance of competencies needed for each of the five automated equipment or function usages were combined into the following two categories:

- a. Important
- b. Unimportant

Summary

The development of the research questionnaire, the selection of the study pilot and sample group, the collection of data, and the treatment

of the data were discussed in this chapter. The description of the statistical analysis was provided as the background for the reporting of the analysis of data in Chapter IV.

CHAPTER 4

THE ANALYSIS OF THE DATA

The purpose of this chapter is to present an analysis of the responses from the 223 participants in this study.

The chapter is divided into two main parts. The first part presents an analysis of the relationships between the four independent variables and the automated equipment or function usage.

The second part presents an analysis of the relationships between the two independent variables and the perceived importance of the competencies needed for the automated equipment or function usage.

I. Testing of Hypothesis No. 1

Hypothesis No. 1 stated that there are no significant differences between business offices in Oklahoma City and Tulsa and the use of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

A. Word Processing Equipment or Function Usage

Table I illustrates the relationships between word processing equipment or function usage in business offices in Oklahoma City and Tulsa. Using the chi-square analysis, no significant relationships were found to exist between the location and the word processing equipment or function usage. Therefore, the hypothesis that there are no significant differences in the automated word processing functions performed in business offices in Oklahoma City and Tulsa cannot be rejected. The analysis revealed that the types of automated word processing functions performed in Oklahoma City and Tulsa are, therefore, similar.

B. Data Processing Equipment or Function Usage

Table II shows the relationships between Oklahoma City and Tulsa and the data processing equipment or function usage. No significant relationships were found to exist between the location and the data processing equipment or function usage. Therefore, the hypothesis that there are no significant differences in the automated data processing functions performed in business offices in Oklahoma City and Tulsa cannot be rejected. The types of data processing functions performed in Oklahoma City are similar to those performed in Tulsa, according to the analysis of the data.

C. Reprographics Equipment or Function Usage

Table III illustrates the relationships between the six equipment or function usages in reprographics in business offices in Oklahoma City and Tulsa. Using the chi-square analysis, no significant relationships

TABLE I
 RELATIONSHIPS BETWEEN THE LOCATION AND THE WORD PROCESSING
 EQUIPMENT OR FUNCTION USAGE

(df = 1)

Equipment or Function	Chi-Square	Sign. Level*
Nondisplay standalone	2.338	0.126
One-line display standalone	0.0	1.000
Standalone with CRT	0.404	0.525
Shared logic system	0.008	0.910
OCR readers for input	0.124	0.725
Terminal on-line to computer	0.415	0.520
Portable dictation units	0.0	1.000
Desk-top dictation machines	0.136	0.713
Central dictating/recording systems	2.513	0.113
Computer-aided transcription	0.727	0.394

*Significant at the .05 level

TABLE II
 RELATIONSHIPS BETWEEN THE LOCATION AND THE DATA PROCESSING
 EQUIPMENT OR FUNCTION USAGE

(df = 1)

Equipment or Function	Chi-Square	Sign. Level*
Mainframe computer	0.082	0.775
Minicomputer	0.944	0.331
Microcomputer(s)	0.102	0.750
Time-sharing computer	0.298	0.585
Computer service bureau	1.199	0.274
Computer graphics	0.087	0.768
Computer data bases	0.010	0.921

*Significant at .05 level

were found to exist between location and the reprographics equipment or function usage. Therefore, the hypothesis that there are no significant differences in the reprographics functions performed in business offices in Oklahoma City and Tulsa cannot be rejected. The automated reprographics functions performed in business offices in Oklahoma City and Tulsa are similar.

D. Records Management Equipment or Function Usage

The relationships between the cities and each of the nine records management equipment or function usages are illustrated in Table IV.

TABLE III
RELATIONSHIPS BETWEEN THE LOCATION AND REPROGRAPHICS
EQUIPMENT OR FUNCTION USAGE

(df = 1)

Equipment or Function	Chi-Square	Sign. Level*
Photocopier(s)	1.046	0.307
COM (Computer Output Microfilm)	0.765	0.382
Phototypesetting	0.002	0.969
Photocomposition	0.339	0.560
Laser printer	1.171	0.279
Intelligent copier(s)	0.191	0.662

*Significant at .05 level

The hypothesis that there are no significant differences in automated records management functions in business offices in Oklahoma City and Tulsa cannot be rejected because no significant relationships were found to exist. Business offices in Oklahoma City and Tulsa are similar with regard to the types of automated records management functions performed.

TABLE IV
RELATIONSHIPS BETWEEN THE LOCATION AND THE RECORDS MANAGEMENT
EQUIPMENT OR FUNCTION USAGE

(df = 1)

Equipment or Function	Chi-Square	Sign. Level*
Microfilm	0.0	1.000
Microfiche	0.0	1.000
Ultrafiche	0.199	0.655
Aperture cards	1.753	0.186
CAR (Computer Assisted Retrieval)	0.0	1.000
COM (Computer Output Microfilm)	0.152	0.697
Micrographic filing system	1.106	0.293
Disk storage of records	0.018	0.892
Tape storage of records	0.042	0.837

*Significant at .05 level

E. Telecommunications Equipment or Function Usage

The relationships between telecommunications equipment or function usage in business offices located in Oklahoma City and Tulsa are illustrated in Table V. Using the chi-square analysis, no significant relationships were found to exist between location and usage. Therefore, the hypothesis that there are no significant differences between the location and the use of the automated telecommunications functions cannot be rejected. Oklahoma City and Tulsa are similar in the types of automated telecommunications functions performed in selected business offices.

II. Testing of Hypothesis No. 2

Hypothesis No. 2 stated that there are no significant differences between the organizational structure (intrastate and interstate) and the use of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

A. Word Processing Equipment or Function Usage

The relationships between the structure of the organization and the ten word processing equipment or function usages are illustrated in Table VI. The statistical analysis revealed a significant relationship between the organizational structure and one of the automated functions,

TABLE V
 RELATIONSHIPS BETWEEN THE LOCATION AND THE TELECOMMUNICATIONS
 EQUIPMENT OR FUNCTION USAGE

(df = 1)

Equipment or Function	Chi-Square	Sign. Level*
Facsimile	1.794	0.180
Computer-based message system	1.555	0.212
Communicating word processors	2.718	0.099
Communicating data terminals	0.037	0.847
Telex	0.968	0.325
PABX	0.323	0.570
Electronic mail	0.142	0.707
Communicating via satellite	1.699	0.193
LAN (Local Area Network)	0.037	0.848
External organization network	0.013	0.909
Teleconferencing	0.448	0.504

*Significant at .05 level

portable dictation units. Therefore, the hypothesis that there are no significant differences between the organizational structure and the use of automated word processing equipment or functions is rejected. The analysis of data revealed that intrastate and interstate organizations vary in the use of portable dictation units.

TABLE VI
RELATIONSHIPS BETWEEN THE STRUCTURE OF THE ORGANIZATION
AND THE WORD PROCESSING EQUIPMENT OR FUNCTION USAGE

(df = 1)

Equipment or Function	Chi-Square	Sign. Level*
Nondisplay standalone	2.662	0.103
One-line display standalone	0.071	0.789
Standalone with CRT	0.777	0.378
Shared logic system	0.185	0.667
OCR readers for input	0.013	0.909
Terminal on-line to computer	1.404	0.236
Portable dictation units	4.546	0.033*
Desk-top dictation machines	1.627	0.202
Central dictating/recording systems	0.701	0.403
Computer-aided transcription	0.104	0.747

*Significant at .05 level

B. Data Processing Equipment or Function Usage

The hypothesis is rejected that there are no significant differences between organizational structure and the use of automated data processing functions. Table VII indicates that the following four individual functions are significantly related to organizational structure: mainframe computer, time-sharing computer, computer graphics, and computer data bases. Therefore, the intrastate and interstate organizations vary in terms of these four types of equipment and/or function usage.

TABLE VII

RELATIONSHIPS BETWEEN THE STRUCTURE OF THE ORGANIZATION
AND THE DATA PROCESSING EQUIPMENT OR FUNCTION USAGE

(df = 1)

Equipment or Function	Chi-Square	Sign. Level*
Mainframe computer	6.844	0.009*
Minicomputer	2.810	0.094
Microcomputer(s)	3.506	0.061
Time-sharing computer	5.422	0.020*
Computer service bureau	0.129	0.720
Computer graphics	10.760	0.001*
Computer data bases	11.970	0.001*

*Significant at .05 level

C. Reprographics Equipment or Function Usage

The relationships between the organizational structure and each of the six reprographics equipment or function usages are illustrated in Table VIII. The statistical analysis revealed significant relationships between the organizational structure and the following automated reprographics functions: laser printer and intelligent copier(s). Therefore, the hypothesis of no significant differences is rejected. This means that the presence and/or usage of laser printers and intelligent copiers varies among intrastate and interstate organizations.

TABLE VIII

RELATIONSHIPS BETWEEN THE STRUCTURE OF THE ORGANIZATION
AND THE REPROGRAPHICS EQUIPMENT OR FUNCTION USAGE

(df = 1)

Equipment or Function	Chi-Square	Sign. Level*
Photocopier(s)	0.432	0.511
COM (Computer Output Microfilm)	2.935	0.087
Phototypesetting	0.425	0.514
Photocomposition	0.0	1.000
Laser printer	7.386	0.007*
Intelligent copier(s)	6.697	0.010*

*Significant at .05 level

D. Records Management Equipment or Function Usage

As shown in Table IX, none of the equipment or function usages in records management were found to have a significant relationship with the organizational structure. Consequently, the hypothesis that there are no significant differences between the organizational structure and the automated records management functions performed cannot be rejected. Intrastate and interstate organizations are similar in terms of the types of automated records management functions they use.

E. Telecommunications Equipment or Function Usage

Table X reveals that the following ten telecommunications equipment or function usages were found to have significant relationships with the organizational structure:

1. Facsimile
2. Computer-based message system
3. Communicating word processors
4. Communicating data terminals
5. Telex
6. PABX
7. Electronic mail
8. Communicating via satellite
9. External organization network
10. Teleconferencing

Therefore, the hypothesis is rejected that there are no significant differences between the organizational structure and the use of the automated telecommunications functions. Except in the case of LANs,

TABLE IX
 RELATIONSHIPS BETWEEN THE STRUCTURE OF THE ORGANIZATION
 AND THE RECORDS MANAGEMENT EQUIPMENT OR FUNCTION USAGE
 (df = 1)

Equipment or Function	Chi-Square	Sign. Level*
Microfilm	0.078	0.780
Microfiche	0.477	0.490
Ultrafiche	0.0	1.000
Aperture cards	2.777	0.096
CAR (Computer Assisted Retrieval)	0.0	1.000
COM (Computer Output Microfilm)	0.891	0.345
Micrographic filing system	1.215	0.270
Disk storage of records	0.129	0.719
Tape storage of records	0.796	0.372
*Significant at .05 level		

the types of automated telecommunications functions performed in intrastate and interstate organizations vary.

TABLE X

RELATIONSHIPS BETWEEN THE STRUCTURE OF THE ORGANIZATION AND
THE TELECOMMUNICATIONS EQUIPMENT OR FUNCTION USAGE

(df = 1)

Equipment or Function	Chi-Square	Sign. Level*
Facsimile	28.315	0.000*
Computer-based message system	13.203	0.000*
Communicating word processors	5.864	0.017*
Communicating data terminals	11.326	0.001*
Telex	18.847	0.000*
PABX	15.037	0.000*
Electronic mail	6.084	0.014*
Communicating via satellite	10.025	0.002*
LAN (Local Area Network)	3.074	0.080
External organization network	5.328	0.021*
Teleconferencing	7.949	0.005*

*Significant at .05 level

III. Testing of Hypothesis No. 3

Hypothesis No. 3 stated that there are no significant differences between various types of business organizations (financial oriented, service, computer related, energy, and other) and the use of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

A. Word Processing Equipment or Function Usage

The relationships between the type of organization and each of the ten word processing equipment or function usages are shown in Table XI. The statistical analysis revealed a significant relationship between the type of organization and the following five individual word processing functions:

1. Shared logic system
2. Terminal on-line to computer
3. Portable dictation units
4. Desk-top dictation machines
5. Central dictating/recording systems

Therefore, the hypothesis that there are no significant differences between type of business organization and the automated word processing functions used is rejected. The analysis of data revealed differences among financial-oriented, service, computer-related, energy, and other organizations with regard to the following types of word processing

functions: shared logic system, terminal on-line to computer, portable dictation units, desk-top dictation machines, and central dictating/recording systems.

TABLE XI
RELATIONSHIPS BETWEEN THE TYPE OF ORGANIZATION AND THE
WORD PROCESSING EQUIPMENT OR FUNCTION USAGE

(df = 4)

Equipment or Function	Chi-Square	Sign. Level*
Nondisplay standalone	3.046	0.550
One-line display standalone	8.082	0.089
Standalone with CRT	11.537	0.021
Shared logic system	21.902	0.000*
OCR readers for input	24.354	0.000
Terminal on-line to computer	14.180	0.007*
Portable dictation units	28.891	0.000*
Desk-top dictation machines	38.742	0.000*
Central dictating/recording	16.636	0.002*
Computer-aided transcription	9.136	0.058

*Significant at .05 level

B. Data Processing Equipment or Function Usage

The relationships between type of organization and each of the data processing equipment or function usages are illustrated in Table XII. Significant relationships were found between the type of organization and five of the equipment and function usages. Therefore, the hypothesis is rejected because significant differences were found between the type of organization and the following automated data processing functions:

1. Mainframe computer
2. Minicomputer
3. Time-sharing computer
4. Computer graphics
5. Computer data bases

The use of the following automated data processing functions varies among the financial-oriented, service, computer-related, and other organizations: mainframe computer, minicomputer, time-share computer, computer graphics, and computer data bases.

C. Reprographics Equipment or Function Usage

Table XIII illustrates the relationships between the type of organization and the reprographics equipment or function usage. The hypothesis that there are no significant differences between the various types of business organizations and the automated reprographics functions used is rejected because significant relationship were found with the following individual usages:

1. COM (Computer Output Microfilm)
2. Phototypesetting

TABLE XII
 RELATIONSHIPS BETWEEN THE TYPE OF ORGANIZATION AND THE
 DATA PROCESSING EQUIPMENT OR FUNCTION USAGE

(df = 4)

Equipment or Function	Chi-Square	Sign. Level*
Mainframe computer	19.687	0.001*
Minicomputer	10.146	0.038*
Microcomputer(s)	0.282	0.991
Time-sharing computer	19.988	0.001*
Computer service bureau	7.151	0.128
Computer graphics	25.032	0.000*
Computer data bases	11.069	0.026*

*Significant at .05 level

3. Photocomposition
4. Laser printer
5. Intelligent copier(s)

Except in the case of photocopiers, the automated reprographics functions vary among the various types of organizations.

TABLE XIII
RELATIONSHIPS BETWEEN THE TYPE OF ORGANIZATION AND THE
THE REPROGRAPHICS EQUIPMENT OR FUNCTION USAGE
(df = 4)

Equipment or Function	Chi-Square	Sign. Level*
Photocopier(s)	4.969	0.291
COM (Computer Output Microfilm)	11.379	0.023*
Phototypesetting	21.361	0.000*
Photocomposition	20.897	0.000*
Laser printer	32.817	0.000*
Intelligent copier(s)	18.708	0.001*

*Significant at .05 level

D. Records Management Equipment or Function Usage

Table XIV presents the relationships between the type of organization and the records management equipment or function usages.

Five of the nine usages were found to have significant relationships with type of organization:

1. Microfilm
2. Microfiche
3. Aperture cards
4. COM (Computer Assisted Retrieval)
5. Tape storage of records

Therefore, the hypothesis that there are no significant differences between various types of business organizations and the automated records management functions performed is rejected. The analysis of the data revealed differences among the various types of organizations with regard to the following records management functions: microfilm, microfiche, aperture cards, COM (Computer Assisted Retrieval), and tape storage of records.

E. Telecommunications Equipment or Function Usage

The relationships between the type of organization and each of the telecommunications equipment or function usages are illustrated in Table XV. The hypothesis that there are no significant differences between the type of organization and the automated telecommunications functions used is rejected because the following seven individual uses were found to have significant relationships:

1. Facsimile
2. Communicating word processors
3. Communicating data terminals
4. Telex
5. PABX

TABLE XIV

RELATIONSHIPS BETWEEN THE TYPE OF ORGANIZATION AND THE
RECORDS MANAGEMENT EQUIPMENT OR FUNCTION USAGE

(df = 4)

Equipment or Function	Chi-Square	Sign. Level*
Microfilm	26.295	0.000*
Microfiche	26.908	0.000*
Ultrafiche	2.273	0.686
Aperture cards	10.352	0.035*
CAR (Computer Assisted Retrieval)	5.167	0.271
COM (Computer Output Microfilm)	18.041	0.001*
Micrographic filing system	5.680	0.224
Disk storage of records	4.333	0.363
Tape storage of records	17.146	0.002*

*Significant at the .05 level

6. LAN (Local Area Network)
7. External organization network

Therefore, financial-related, service, computer-related, energy, and other organizations vary regarding these seven types of equipment and/or function usages.

TABLE XV
RELATIONSHIPS BETWEEN THE TYPE OF ORGANIZATION AND THE
TELECOMMUNICATIONS EQUIPMENT OR FUNCTION USAGE
(df = 4)

Equipment or Function	Chi-Square	Sign. Level*
Facsimile	30.732	0.000*
Computer-based message system	5.570	0.234
Communicating word processors	28.524	0.000*
Communicating data terminals	11.085	0.026*
Telex	27.533	0.000*
PABX	25.478	0.000*
Electronic mail	5.448	0.244
Communicating via satellite	9.183	0.057
LAN (Local Area Network)	10.621	0.031*
External organization network	11.234	0.024*
Teleconferencing	9.365	0.053

*Significant at .05 level

IV. Testing of Hypothesis No. 4

Hypothesis No. 4 stated that there were no significant differences between the size (0 - 49, 50 - 299, and 300+ employees) of the business organization and the use of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

A. Word Processing Equipment or Function Usage

Table XVI illustrates the relationships between the size of the organization and the automated word processing equipment or function usage. All of the functions were found to have significant relationships. Therefore, the hypothesis that there are no significant differences between the size of the organization and the use of the automated word processing functions is rejected. All of the automated word processing functions performed do vary among the various sizes of organizations.

B. Data Processing Equipment of Function Usage

The relationships between the size of the organization and the use of automated data processing functions are shown in Table XVII. The hypothesis that there are no significant differences between the size of the organization and the use of automated data processing functions is rejected. The following six functions were shown to have significant relationships:

1. Mainframe Computer
2. Minicomputer
3. Microcomputer(s)
4. Time-sharing computer
5. Computer graphics
6. Computer data bases

Except in the case of computer service bureau, the automated data processing functions performed do vary among the various sizes of organizations.

C. Reprographics Equipment or Function Usage

Table XVIII revealed that significant relationships existed between the size of the organization and the following five functions that were studied:

1. COM (Computer Output Microfilm)
2. Phototypesetting
3. Photocomposition
4. Laser printer
5. Intelligent copier(s)

Therefore, the hypothesis that there are no significant differences between size of organization and the use of automated reprographics functions is rejected. All automated reprographics functions performed, except for use of photocopiers, vary according to the various sizes of organizations.

TABLE XVI

RELATIONSHIPS BETWEEN THE SIZE OF THE ORGANIZATION AND THE
WORD PROCESSING EQUIPMENT OR FUNCTION USAGE

(df = 2)

Equipment or Function	Chi-Square	Sign. Level*
Nondisplay standalone	11.457	0.003*
One-line display standalone	7.627	0.022*
Standalone with CRT	19.850	0.000*
Shared logic system	16.435	0.000*
OCR readers for input	13.552	0.001*
Terminal on-line to computer	5.824	0.054*
Portable dictation units	24.179	0.000*
Desk-top dictation machines	28.719	0.000*
Central dictating/recording systems	26.160	0.000*
Computer-aided transcription	10.259	0.006*

*Significant at .05 level

TABLE XVII

RELATIONSHIP BETWEEN THE SIZE OF THE ORGANIZATION AND THE
DATA PROCESSING EQUIPMENT OR FUNCTION USAGE

(df = 2)

Equipment or Function	Chi-Square	Sign. Level*
Mainframe computer	49.706	0.000*
Minicomputer	17.257	0.000*
Microcomputer(s)	10.373	0.006*
Time-sharing computer	6.723	0.035*
Computer service bureau	3.022	0.221
Computer graphics	19.682	0.000*
Computer data bases	26.129	0.000*

*Significant at .05 level

TABLE XVIII

RELATIONSHIPS BETWEEN THE SIZE OF THE ORGANIZATION AND
THE REPROGRAPHICS EQUIPMENT OR FUNCTION USAGE

(df = 2)

Equipment or Function	Chi-Square	Sign. Level*
Photocopier(s)	2.131	0.345
COM (Computer Output Microfilm)	19.321	0.000*
Phototypesetting	26.686	0.000*
Photocomposition	34.467	0.000*
Laser printer	23.853	0.000*
Intelligent copier(s)	28.232	0.000*

*Significant at .05 level

D. Records Management Equipment or Function Usage

Table XIX shows the relationships between size of organization and the automated records management equipment or function usages. Significant relationships were revealed between the size of the organization and the following functions:

1. Microfilm
2. Microfiche
3. Aperture cards
4. CAR (Computer Assisted Retrieval)
5. COM (Computer Output Microfilm)
6. Disk storage of records
7. Tape storage of records

Therefore, the hypothesis that there are no significant differences between size of the organization and the automated records management functions used is rejected. With the exception of ultrafiche and micrographic filing systems, the use of automated records management functions varies with the size of the organization.

E. Telecommunications Equipment or Function Usage

The relationships between the size of the organization and the telecommunications equipment or function usages are illustrated in Table XX. The hypothesis that there are no significant differences between the size of the organization and the automated telecommunications functions usage is rejected because the following seven functions were significantly related to organizational size:

1. Facsimile
2. Communicating word processors

TABLE XIX

RELATIONSHIPS BETWEEN THE SIZE OF THE ORGANIZATION AND THE
RECORDS MANAGEMENT EQUIPMENT OR FUNCTION USAGE

(df = 2)

Equipment or Function	Chi-Square	Sign. Level*
Microfilm	40.892	0.000*
Microfiche	56.417	0.000*
Ultrafiche	3.827	0.148
Aperture cards	15.074	0.001*
CAR (Computer Assisted Retrieval)	7.538	0.023*
COM (Computer Output Microfilm)	25.682	0.000*
Micrographic filing system	4.831	0.089
Disk storage of records	15.302	0.001*
Tape storage of records	30.921	0.000*

*Significant at .05 level

3. Communicating data terminals
4. Telex
5. PABX
6. LAN (Local Area Network)
7. Teleconferencing

The use of only the following three automated telecommunications functions does not vary with the organization's size: computer-based message systems, electronic mail, and communicating via satellite.

TABLE XX

RELATIONSHIPS BETWEEN THE SIZE OF THE ORGANIZATION AND THE TELECOMMUNICATIONS EQUIPMENT OR FUNCTION USAGE

(df = 2)

Equipment or Function	Chi-Square	Sign. Level*
Facsimile	20.673	0.000*
Computer-based message system	2.853	0.240
Communicating word processors	16.312	0.000*
Communicating data terminals	17.886	0.000*
Telex	25.164	0.000*
PABX	31.453	0.000*
Electronic mail	5.081	0.079
Communicating via satellite	1.937	0.380
LAN (Local Area Network)	15.156	0.001*
Teleconferencing	7.241	0.027*

*Significant at .05 level

V. Testing of Hypothesis No. 5

Hypothesis No. 5 stated that there are no significant differences between Oklahoma City and Tulsa and the perceived importance of competencies needed by future office employees in each of the following automated functions:

1. Word Processing
2. Data Processing
3. Reprographics
4. Records management
5. Telecommunications

A. Perceived Importance of Competencies

Needed for Word Processing

The relationships between the locations and the perceived importance of the twenty-seven competencies needed for word processing are illustrated in Table XXI. Using the chi-square analysis, no significant relationships were found to exist. Therefore, the hypothesis that there are no significant differences between Oklahoma City and Tulsa and the perceived importance of the competencies needed by future office employees in the automated word processing functions cannot be rejected. Analysis of data revealed that the perceived importance of competencies needed by future office employees performing word processing functions in Oklahoma City are similar to those in Tulsa.

TABLE XXI

RELATIONSHIPS BETWEEN THE LOCATION AND THE PERCEIVED IMPORTANCE OF
COMPETENCIES NEEDED FOR AUTOMATED WORD PROCESSING

(df = 1)

Competency	Chi-Square	Sign. Level*
Communicating orally	0.026	0.872
Receiving those who come to the office	1.117	0.291
Communicating via telephone	0.180	0.671
Filing alphabetically	0.006	0.941
Filing numerically	0.054	0.816
Spelling accurately	0.835	0.361
Punctuating accurately	0.119	0.731
Using grammar correctly	0.005	0.943
Composing messages	0.0	1.000
Proofreading copy/screens	0.215	0.643
Using reference sources	0.0	1.000
Keyboarding	0.004	0.947
Typewriting	0.0	1.000
Formatting documents	0.064	0.800
Transcribing from machine dictation	1.516	0.218
Transcribing from shorthand dictation	0.059	0.808
Using legible penmanship	0.006	0.940
Performing math calculations	0.280	0.597
Performing recordkeeping and/or bookkeeping activities	0.568	0.541
Operating applicable equipment	0.209	0.648
Handling maintenance of applicable equipment	0.127	0.722
Selecting applicable software	0.0	1.000
Using applicable software	1.371	0.242
Handling communication between various types of electronic equipment	0.035	0.851
Accessing data bases	0.069	0.793
Updating data bases	0.081	0.776
Programming	0.278	0.598

*Significant at .05 level

B. Perceived Importance of Competencies

Needed for Data Processing

Table XXII shows the relationships between the location and the perceived importance of the twenty-seven competencies needed for automated data processing functions. The statistical analysis of the data indicated that there were no significant relationships existing between the variables. Therefore, the hypothesis that there are no significant differences between Oklahoma City and Tulsa and the perceived importance of the competencies needed by future office employees in automated data processing functions cannot be rejected. The perceived importance of competencies needed by future office employees for the performance of automated data processing functions in Oklahoma City and Tulsa are similar.

C. Perceived Importance of Competencies

Needed for Reprographics

Table XXIII indicates that the statistical analysis revealed no significant relationships between the location and the perceived importance of the twenty-seven competencies needed for reprographics. Therefore, the hypothesis that there are no significant differences between Oklahoma City and Tulsa and the perceived importance of the competencies for reprographics needed by future office employees in automated reprographics functions cannot be rejected. The perceived importance of competencies needed for reprographics by future office employees in Oklahoma City and Tulsa are similar.

TABLE XXII

RELATIONSHIPS BETWEEN THE LOCATION AND THE PERCEIVED IMPORTANCE OF
COMPETENCIES NEEDED FOR AUTOMATED DATA PROCESSING

(df = 1)

Competency	Chi-Square	Sign. Level*
Communicating orally	0.0	1.000
Receiving those who come to the office	0.0	1.000
Communicating via telephone	1.058	0.304
Filing alphabetically	0.190	0.663
Filing numerically	0.0	1.000
Spelling accurately	0.009	0.925
Punctuating accurately	0.309	0.579
Using grammar correctly	0.006	0.938
Composing messages	0.581	0.446
Proofreading copy/screens	1.078	0.299
Using reference sources	0.0	1.000
Keyboarding	0.0	1.000
Typewriting	3.386	0.066
Formatting documents	0.0	1.000
Transcribing from machine dictation	0.0	1.000
Transcribing from shorthand dictation	0.0	1.000
Using legible penmanship	0.090	0.764
Performing math calculations	0.0	1.000
Performing recordkeeping and/or bookkeeping activities	0.0	1.000
Operating applicable equipment	0.011	0.916
Handling maintenance of applicable equipment	0.486	0.486
Selecting applicable software	0.0	1.000
Using applicable software	0.0	1.000
Handling communication between various types of electronic equipment	1.185	0.276
Accessing data bases	0.0	1.000
Updating data bases	0.628	0.428
Programming	0.028	0.867

*Significant at .05 level

TABLE XXIII

RELATIONSHIPS BETWEEN THE LOCATION AND THE PERCEIVED IMPORTANCE OF
COMPETENCIES NEEDED FOR AUTOMATED REPROGRAPHICS

(df = 1)

Competency	Chi-Square	Sign. Level*
Communicating orally	0.027	0.869
Receiving those who come to the office	0.025	0.875
Communicating via telephone	0.010	0.921
Filing alphabetically	0.002	0.967
Filing numerically	0.059	0.808
Spelling accurately	1.888	0.169
Punctuating accurately	1.396	0.237
Using grammar correctly	2.041	0.153
Composing messages	0.550	0.458
Proofreading copy/screens	0.087	0.768
Using reference sources	2.425	0.119
Keyboarding	0.0	1.000
Typewriting	0.201	0.654
Formatting documents	0.030	0.862
Transcribing from machine dictation	0.0	1.000
Transcribing from shorthand dictation	0.0	1.000
Using legible penmanship	3.636	0.057
Performing math calculations	1.111	0.292
Performing recordkeeping and/or bookkeeping activities	0.007	0.934
Operating applicable equipment	0.0	1.000
Handling maintenance of applicable equipment	0.0	1.000
Selecting applicable software	0.033	0.856
Using applicable software	0.0	1.000
Handling communication between various types of electronic equipment	0.0	1.000
Accessing data bases	0.009	0.923
Updating data bases	0.003	0.956
Programming	0.0	1.000

*Significant at .05 level

D. Perceived Importance of Competencies

Needed for Records Management

Table XXIV shows the relationships between the location and the perceived importance of the twenty-seven competencies needed for automated records management. The chi-square analysis of the data revealed that there was a significant relationship with one competency, updating data bases. Therefore, the hypothesis that there are no significant differences between locations and the perceived importance of the competencies needed by future office employees in the automated records management functions is rejected. The perceived importance of competency in updating data bases varies between Oklahoma City and Tulsa. The two cities are similar in the perceived importance of all other competencies needed in records management.

E. Perceived Importance of Competencies

Needed for Telecommunications

The relationships between the location and the perceived importance of competencies needed for automated telecommunications are illustrated in Table XXV. The statistical analysis of the data indicated that there were no significant differences. Therefore, the hypothesis that there are no significant differences between the location and the perceived importance of competencies needed by future office employees in automated telecommunications functions cannot be rejected. The analysis of the data indicated that Oklahoma City and Tulsa are similar in the perceived importance of the competencies needed by future office employees for automated telecommunications functions.

TABLE XXIV

RELATIONSHIPS BETWEEN THE LOCATION AND THE PERCEIVED IMPORTANCE OF
COMPETENCIES NEEDED FOR AUTOMATED RECORDS MANAGEMENT

(df = 1)

Competency	Chi-Square	Sign. Level*
Communicating orally	1.294	0.255
Receiving those who come to the office	0.011	0.918
Communicating via telephone	1.073	0.300
Filing alphabetically	2.266	0.132
Filing numerically	3.539	0.060
Spelling accurately	0.067	0.795
Punctuating accurately	0.009	0.926
Using grammar correctly	0.092	0.762
Composing messages	0.113	0.736
Proofreading copy/screens	1.575	0.210
Using reference sources	0.750	0.386
Keyboarding	0.019	0.890
Typewriting	0.0	1.000
Formatting documents	0.255	0.614
Transcribing from machine dictation	0.110	0.740
Transcribing from shorthand dictation	0.000	0.993
Using legible penmanship	0.257	0.612
Performing math calculations	0.548	0.459
Performing recordkeeping and/or bookkeeping activities	0.0	1.000
Operating applicable equipment	0.0	1.000
Handling maintenance of applicable equipment	0.008	0.927
Selecting applicable software	0.041	0.839
Using applicable software	0.262	0.609
Handling communication between various types of electronic equipment	1.673	0.196
Accessing data bases	7.284	0.007
Updating data bases	5.236	0.022*
Programming	0.038	0.845

*Significant at .05 level

TABLE XXV

RELATIONSHIPS BETWEEN THE LOCATION AND THE PERCEIVED IMPORTANCE OF
COMPETENCIES NEEDED FOR AUTOMATED TELECOMMUNICATIONS

(df = 1)

Competency	Chi-Square	Sign. Level*
Communicating orally	0.533	0.465
Receiving those who come to the office	2.609	0.106
Communicating via telephone	0.0	1.000
Filing alphabetically	0.179	0.672
Filing numerically	0.008	0.930
Spelling accurately	0.0	1.000
Punctuating accurately	0.489	0.484
Using grammar correctly	0.034	0.854
Composing messages	2.122	0.145
Proofreading copy/screens	0.390	0.533
Using reference sources	0.357	0.550
Keyboarding	0.0	1.000
Typewriting	0.621	0.431
Formatting documents	0.0	1.000
Transcribing from machine dictation	0.195	0.659
Transcribing from shorthand dictation	0.044	0.835
Using legible penmanship	0.0	1.000
Performing math calculations	0.058	0.809
Performing recordkeeping and/or bookkeeping activities	1.199	0.274
Operating applicable equipment	0.333	0.564
Handling maintenance of applicable equipment	0.212	0.645
Selecting applicable software	0.0	1.000
Using applicable software	0.0	1.000
Handling communication between various types of electronic equipment	0.0	1.000
Accessing data bases	0.0	1.000
Updating data bases	0.086	0.770
Programming	1.005	0.316

*Significant at .05 level

VI. Testing of Hypothesis No. 6

Hypothesis No. 6 stated that there are no significant differences among respondents in the various types of business organizations (financial oriented, service, computer related, energy, and other) and the perceived competencies needed by future office employees in each of the following automated functions:

- A. Word processing
- B. Data processing
- C. Reprographics
- D. Records management
- E. Telecommunications

A. Perceived Importance of Competencies

Needed for Word Processing

The relationships between the the type of organization and the perceived importance of competencies needed for automated word processing functions are illustrated in Table XXVI. The chi-square analysis of the data revealed that there was a significant relationship between the type of organization and the competency, filing numerically. Therefore, the hypothesis that there are no significant differences between the types of organizations and the perceived importance of competencies needed by future office employees in the automated word processing functions is rejected. Respondents in Oklahoma City and Tulsa vary in the perceived importance of the competency of filing numerically. Regarding all other competencies, the two cities are similar.

TABLE XXVI

RELATIONSHIPS BETWEEN THE TYPE OF ORGANIZATION AND THE PERCEIVED
IMPORTANCE OF COMPETENCIES NEEDED FOR
AUTOMATED WORD PROCESSING

(df = 1)

Competency	Chi-Square	Sign. Level*
Communicating orally	1.716	0.788
Receiving those who come to the office	8.399	0.078
Communicating via telephone	5.319	0.256
Filing alphabetically	1.842	0.765
Filing numerically	10.141	0.038*
Spelling accurately	6.066	0.194
Punctuating accurately	3.886	0.422
Using grammar correctly	1.955	0.744
Composing messages	2.560	0.634
Proofreading copy/screens	7.377	0.117
Using reference sources	4.848	0.303
Keyboarding	12.478	0.014
Typewriting	5.608	0.230
Formatting documents	4.713	0.318
Transcribing from machine dictation	7.571	0.109
Transcribing from shorthand dictation	8.214	0.084
Using legible penmanship	4.792	0.309
Performing math calculations	6.115	0.191
Performing recordkeeping and/or bookkeeping activities	5.653	0.227
Operating applicable equipment	8.964	0.062
Handling maintenance of applicable equipment	1.273	0.866
Selecting applicable software	2.124	0.713
Using applicable software	3.981	0.409
Handling communication between various types of electronic equipment	5.770	0.217
Accessing data bases	4.001	0.406
Updating data bases	2.227	0.694
Programming	0.691	0.952

*Significant at .05 level

B. Perceived Importance of Competencies

Needed for Data Processing

Table XXVII shows the relationships between the type of organization and the perceived importance of the competencies needed for automated data processing. There were no significant relationships revealed. Therefore, the hypothesis that there are no significant differences between the type of business organizations and the perceived competencies needed by future office employees in automated data processing cannot be rejected. The perceived importance of competencies needed by future office employees for automated data processing does not vary among the respondents in the various types of organizations.

C. Perceived Importance of Competencies

Needed for Reprographics

Table XXVIII illustrates the relationships between the type of organization and the perceived importance of competencies needed for reprographics. No significant relationships with the type of organization were indicated by the statistical analysis. Therefore, the hypothesis that there are no significant differences between the type of business organizations and the perceived importance of competencies needed by future office employees in the automated reprographics functions cannot be rejected. From the analysis of the data, the respondents in the various types of organizations are similar in their perceived importance of competencies needed for automated reprographics functions.

TABLE XXVII

RELATIONSHIPS BETWEEN THE TYPE OF ORGANIZATION AND THE PERCEIVED
IMPORTANCE OF COMPETENCIES NEEDED FOR
AUTOMATED DATA PROCESSING

(df = 1)

Competency	Chi-Square	Sign. Level*
Communicating orally	2.013	0.733
Receiving those who come to the office	7.430	0.115
Communicating via telephone	4.104	0.392
Filing alphabetically	2.015	0.733
Filing numerically	8.114	0.088
Spelling accurately	0.132	0.998
Punctuating accurately	0.478	0.976
Using grammar correctly	0.814	0.937
Composing messages	0.349	0.986
Proofreading copy/screens	0.784	0.941
Using reference sources	8.484	0.075
Keyboarding	4.833	0.305
Typewriting	3.757	0.440
Formatting documents	7.938	0.094
Transcribing from machine dictation	2.554	0.635
Transcribing from shorthand dictation	3.057	0.548
Using legible penmanship	1.515	0.824
Performing math calculations	2.781	0.595
Performing recordkeeping and/or bookkeeping activities	1.832	0.767
Operating applicable equipment	6.993	0.136
Handling maintenance of applicable equipment	7.522	0.111
Selecting applicable software	5.291	0.259
Using applicable software	8.397	0.078
Handling communication between various types of electronic equipment	6.998	0.136
Accessing data bases	3.855	0.426
Updating data bases	2.669	0.615
Programming	10.946	0.027

*Significant at .05 level

TABLE XXVIII

RELATIONSHIPS BETWEEN THE TYPE OF ORGANIZATION AND THE PERCEIVED
IMPORTANCE OF THE COMPETENCIES NEEDED FOR
AUTOMATED REPROGRAPHICS

(df = 1)

Competency	Chi-Square	Sign. Level*
Communicating orally	5.663	0.226
Receiving those who come to the office	0.251	0.993
Communicating via telephone	2.489	0.647
Filing alphabetically	6.337	0.175
Filing numerically	5.481	0.241
Spelling accurately	10.421	0.034
Punctuating accurately	8.384	0.079
Using grammar correctly	6.556	0.161
Composing messages	1.180	0.881
Proofreading copy/screens	2.196	0.700
Using reference sources	3.467	0.483
Keyboarding	3.621	0.460
Typewriting	4.425	0.352
Formatting documents	6.576	0.160
Transcribing from machine dictation	3.076	0.545
Transcribing from shorthand dictation	0.464	0.977
Using legible penmanship	0.757	0.944
Performing math calculations	2.479	0.649
Performing recordkeeping and/or bookkeeping activities	3.217	0.522
Operating applicable equipment	2.515	0.642
Handling maintenance of applicable equipment	2.689	0.611
Selecting applicable software	1.823	0.768
Using applicable software	5.653	0.227
Handling communication between various types of electronic equipment	2.657	0.617
Accessing data bases	0.823	0.935
Updating data bases	1.655	0.799
Programming	1.158	0.885

*Significant at .05 level

D. Perceived Importance of Competencies

Needed for Records Management

Table XXIX revealed that there were no significant relationships between the type of organization and the perceived importance of competencies for records management. Therefore, the hypothesis cannot be rejected that there are no significant differences among respondents in the various types of business organizations and the perceived competencies needed by future office employees in the automated records management functions. Among the respondents in the various types of organizations, the perceived importance of competencies needed by future office employees to perform automated records management functions does not vary.

E. Perceived Importance of Competencies

Needed for Telecommunications

Illustrated in Table XXX are the relationships between the type of organization and the perceived competencies needed by future office employees for telecommunications. The hypothesis that there are no significant differences among respondents in the various types of business organizations and the perceived competencies needed by future office employees in automated telecommunications functions cannot be rejected since none of the relationships were significant. The data analysis indicated that respondents in the various types of organizations are similar in their perception of the importance of competencies needed to perform automated telecommunications functions in the future.

TABLE XXIX

RELATIONSHIPS BETWEEN THE TYPE OF ORGANIZATION AND THE PERCEIVED
IMPORTANCE OF COMPETENCIES NEEDED FOR
AUTOMATED RECORDS MANAGEMENT

(df = 1)

Competency	Chi-Square	Sign. Level*
Communicating orally	3.299	0.509
Receiving those who come to the office	5.113	0.276
Communicating via telephone	2.890	0.576
Filing alphabetically	3.405	0.492
Filing numerically	4.096	0.393
Spelling accurately	1.144	0.887
Punctuating accurately	3.732	0.444
Using grammar correctly	2.058	0.725
Composing messages	2.236	0.693
Proofreading copy/screens	3.816	0.431
Using reference sources	2.218	0.696
Keyboarding	4.156	0.385
Typewriting	3.126	0.537
Formatting documents	4.647	0.326
Transcribing from machine dictation	2.388	0.665
Transcribing from shorthand dictation	2.149	0.708
Using legible penmanship	1.723	0.787
Performing math calculations	3.061	0.548
Performing recordkeeping and/or bookkeeping activities	0.972	0.914
Operating applicable equipment	5.966	0.202
Handling maintenance of applicable equipment	2.893	0.576
Selecting applicable software	1.798	0.773
Using applicable software	8.377	0.079
Handling communication between various types of electronic equipment	2.243	0.691
Accessing data bases	6.442	0.169
Updating data bases	2.371	0.668
Programming	5.419	0.247

*Significant at .05 level

TABLE XXX

RELATIONSHIPS BETWEEN THE TYPE OF ORGANIZATION AND THE PERCEIVED
IMPORTANCE OF COMPETENCIES NEEDED FOR
AUTOMATED TELECOMMUNICATIONS

(df = 1)

Competency	Chi-Square	Sign. Level*
Communicating orally	8.340	0.080
Receiving those who come to the office	4.748	0.314
Communicating via telephone	8.191	0.085
Filing alphabetically	2.794	0.593
Filing numerically	4.579	0.333
Spelling accurately	4.481	0.345
Punctuating accurately	2.891	0.576
Using grammar correctly	4.929	0.295
Composing messages	1.836	0.766
Proofreading copy/screens	3.113	0.539
Using reference sources	6.936	0.139
Keyboarding	0.723	0.949
Typewriting	7.631	0.106
Formatting documents	7.707	0.103
Transcribing from machine dictation	5.492	0.241
Transcribing from shorthand dictation	1.663	0.797
Using legible penmanship	0.635	0.959
Performing math calculations	3.136	0.535
Performing recordkeeping and/or bookkeeping activities	0.908	0.923
Operating applicable equipment	3.263	0.515
Handling maintenance of applicable equipment	0.648	0.958
Selecting applicable software	3.561	0.469
Using applicable software	1.483	0.830
Handling communication between various types of electronic equipment	1.530	0.821
Accessing data bases	5.194	0.268
Updating data bases	4.232	0.376
Programming	1.790	0.774

*Significant at .05 level

Summary

The analysis of the data gathered from the responses to the study questionnaire was presented in this chapter. The technique used for analyzing the data was the chi-square test of independence. The results were summarized and presented through the discussion and tables within the chapter. The conclusions and recommendations are presented in Chapter 5.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this chapter is to present the summary, conclusions, and recommendations that resulted from this study. The summary reviews the purpose of the study and the procedures used for the study. The results indicated by the analysis of the data are presented in the findings. The conclusions are inferences derived from the reported findings. Recommendations are made based on the findings and conclusions.

Summary

This study was designed to assess the competencies required of future employees performing technical functions in automated offices. The purpose of the study was to supply information for developing innovative, relevant curriculum for the automated office field.

The membership of the Oklahoma City and Tulsa chapters of the Administrative Management Society and the Data Processing Management Association were selected as participants in this study since they usually use or direct the use of the automated functions in the office. The two major metropolitan areas of Oklahoma City and Tulsa, Oklahoma, were selected as the locations for this study for assessing the competencies needed by future office employees.

The questionnaire developed for gathering data for this study was mailed to 400 members of the Oklahoma City and Tulsa AMS and DPMA chapters. A response rate of 64.08 per cent resulted from the three mailings of the questionnaire, which was designed to collect data to be analyzed for the purpose of testing the following hypotheses:

1. There are no significant differences between business offices in Oklahoma City and Tulsa and the use of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

2. There are no significant differences between the organizational structure and the use of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

3. There are no significant differences between various types of business organizations and the use of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

4. There are no significant differences between the size of the business organization and the use of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

5. There are no significant differences between Oklahoma City and Tulsa and the perceived importance of competencies needed by future office employees in each of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

6. There are no significant differences among respondents in the various types of business organizations and the perceived competencies needed by future office employees in each of the following automated functions:

- a. Word processing
- b. Data processing
- c. Reprographics
- d. Records management
- e. Telecommunications

The Statistical Package for the Social Sciences, Release X, (SPSSx) computer program package was utilized to process the data. Chi-square was selected as the method of statistical analysis to study

the nature of the relationships between the independent and dependent variables. The .05 level of significance was used.

Summary of Findings

Location

No significant relationships were found to exist between the location of the business organization and the following areas of automated equipment or function usage: word processing, data processing, reprographics, records management, and telecommunications.

Organizational Structure

Significant relationships were found to exist between the organizational structure of the business organization and the use of the following automated equipment or functions:

- a. Word processing: the use of portable dictation units.
- b. Data processing: the use of mainframe computers, time-sharing computer, computer graphics, and computer data bases.
- c. Reprographics: laser printer and intelligent copier(s)
- d. Records management: none
- e. Telecommunications: Facsimile, computer-based message system, communicating word processors, communicating data terminals, Telex, PABX, electronic mail, communicating via satellite, external organization network, and teleconferencing.

Therefore, intrastate and interstate organizations vary with regard to the use and function of certain areas in office automation.

Types of Business Organizations

Significant relationships were found to exist between the type of business organization and the use of the following automated equipment or functions:

- a. Word processing: shared logic system, terminal on-line to computer, portable dictation units, desk-top dictation machines, and central dictating/recording systems.
- b. Data processing: mainframe computer, minicomputer, time-sharing computer, computer graphics, and computer data bases.
- c. Reprographics: COM (Computer Output Microfilm), phototypesetting, photocomposition, laser printer, and intelligent copier(s).
- d. Records management: microfilm, microfiche, aperture cards, COM (Computer Output Microfilm), and tape storage of records.
- e. Telecommunications: facsimile, communicating word processors, communicating data terminals, Telex, PABX, LAN (Local Area Network), and external organization network.

Therefore, various types of business organizations vary in terms of the use and function of certain areas in office automation.

Size

Significant relationships were found to exist between the size of the business organization and the use of the following automated equipment or functions:

- a. Word processing:
 1. Nondisplay standalone
 2. One-line display standalone

3. Standalone with CRT
 4. Shared logic system
 5. OCR readers for input
 6. Terminal on-line to computer
 7. Portable dictation units
 8. Desk-top dictation machines
 9. Central dictating/recording systems
 10. Computer-aided transcription
- b. Data processing:
1. Mainframe computer
 2. Minicomputer
 3. Microcomputer(s)
 4. Time-sharing computer
 5. Computer graphics
 6. Computer data bases
- c. Reprographics:
1. COM (Computer Output Microfilm)
 2. Phototypesetting
 3. Photocomposition
 4. Laser printer
 5. Intelligent copier(s)
- d. Records Management:
1. Microfilm
 2. Microfiche
 3. Aperture cards
 4. CAR (Computer Assisted Retrieval)
 5. COM (Computer Output Microfilm)

6. Disk storage of records
 7. Type storage of records
- e. Telecommunications
1. Facsimile
 2. Communicating word processors
 3. Communicating data terminals
 4. Telex
 5. PABX
 6. LAN (Local Area Network)
 7. Teleconferencing

Therefore, the size of the organization affects the use and function of certain areas of office automation.

Location of Business Organization and Perceived
Importance of Competencies Needed
for Automated Functions

A significant relationship was found to exist between the location of the business organization and the perceived importance of the competencies needed to perform the automated records management function of updating data bases. No significant relationships were found to exist between the location and the following areas of automated equipment or function usage: word processing, data processing, reprographics, and telecommunications.

Type of Business Organization and Perceived

Importance of Competencies Needed

for Automated Functions

A significant relationship was found to exist between the type of business organization and the perceived importance of competencies needed for the automated word processing function of filing numerically. No significant relationships were found to exist between the type of organization and the perceived importance of competencies needed for the use of automated equipment or functions in the following areas: data processing, reprographics, records management, and telecommunications.

Conclusions

The following conclusions are based on the findings from the analysis of the data collected in this study:

1. The types of functions for which automated equipment is used in Tulsa are similar to the types of functions for which automated equipment is used in Oklahoma City. Therefore, if future office workers trained in Oklahoma schools are qualified to work in Tulsa offices using office automation, they will also be qualified to work in offices in Oklahoma City using office automation, and vice versa.

2. While intrastate and interstate organizations vary in the functions for which automated equipment is used in word processing, data processing, reprographics, and telecommunications, they are similar in the functions for which automated equipment is used in records management. Therefore, future office employees trained in Oklahoma will find differences among intrastate and interstate organizations with regard to the functions for which automated equipment is used in word

processing, data processing, reprographics, and telecommunications, but they will find similarities in the records management area.

3. Financial-related, service, computer-related, energy, and other organizations vary in the functions for which automated equipment is used in word processing, data processing, reprographics, records management, and telecommunications. As a result, future office employees trained in Oklahoma schools will find that the way the equipment is used will vary from one type of organization to another. Because of the nature of these variances, it would be counterproductive to train students for employment in a particular type of organization, unless employment in that type of organization can be guaranteed.

4. The size of organizations, as measured by the number of employees, is responsible for a variance in the functions for which automated office equipment is used in word processing, data processing, reprographics, records management, and telecommunications. As a result, training future office employees for employment in a certain-sized organization is not supported, unless employment in that size of organization can be assured.

5. The competencies perceived to be important for future office employees in Oklahoma City are similar to those perceived to be important for employment in Tulsa offices. Therefore, it is possible to use a universal list of competencies needed of future office employees when determining the appropriate content to provide in their training experiences.

6. The competencies perceived to be important for future office employees employed in financial-related, service, computer-related, energy, and other offices are similar. Therefore, it is possible to use

a universal list of competencies needed of future office employees when determining the appropriate content to provide in their training experiences.

7. While the location of business organizations has minimal impact on the types of functions for which automated equipment is used and on the perceived importance of competencies needed of future office employees, the type of business organization does have an impact on the functions for which automated equipment is used in word processing, data processing, reprographics, records management, and telecommunications. Also of little consequence is the impact of the type of business organization on the perceived importance of competencies needed of future office employees.

8. The training of future office employees in Oklahoma schools for employment in offices using automated equipment should be broad based. Training future office employees for employment in offices in a particular location, for employment in offices of a particular structure, for employment in offices of a particular type, or the employment in offices of a particular size cannot be supported.

Recommendations

This section provides recommendations for curriculum development in the automated office field, as well as implications for additional research.

1. It is recommended that instructional programs designed to train students for work in offices involved with the changing technologies be reviewed and evaluated annually to determine the relevancy to the current needs of business organizations.

2. It is recommended that educators involved in preparing students to enter office occupations maintain a constant awareness of the changing nature of the extent of automated functions in the office through contact with the business community being served. Advisory committees composed of members of the business community should continue to play an important role by providing input for program development.

3. It is recommended that even though the size of the business organization apparently influences the extent to which the automated functions are used, curriculum should meet the training needs of future employees for businesses regardless of their size.

4. It is recommended that the basic instructional areas of English grammar skills, communication skills, calculation skills, and decision-making skills continue to receive major emphasis in the preparation for working with office automation. Even though the office functions increasingly are becoming automated, the competencies needed apply regardless of the type or the location of the business.

5. It is recommended that educators make periodic surveys to determine the changing nature of the office equipment used in the business world for which training is provided since equipment is a major component of office automation.

6. It is recommended that educators maintain involvement with the professional organizations providing opportunities for information gathering and exchange with various segments of the business community dealing directly with the automated office.

7. It is recommended that additional studies be conducted to determine the implications for training for future office employees relating to the expanding automated office functions.

8. It is recommended that more in-depth studies be conducted in each of the five automated office function categories to provide additional information for curriculum development.

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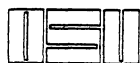
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APPENDIX A

PILOT COVER LETTER



Oklahoma State University

COLLEGE OF BUSINESS ADMINISTRATION

STILLWATER, OKLAHOMA 74078
(405) 624-5064

December 8, 1983

Dear

SUBJECT: OFFICE AUTOMATION STUDY

Because of changing technology, the extent and the implications of the automation of office functions presents a timely topic for review. The questionnaire that I have developed to collect the data for my doctoral dissertation at Oklahoma State University addresses the automation of office functions in today's businesses in Oklahoma. The information yielded from this study will be of value to administrators and business educators who are developing curriculum and instructional programs for the training of your future office employees.

You and your organization have been selected to participate in the pilot study to test the research questionnaire. Please take a few minutes of your valuable time to complete the enclosed questionnaire. Feel free to comment on the questionnaire, particularly concerning sections which you feel may be misleading or difficult to answer.

Your assistance with this research will be appreciated. A self-addressed, stamped envelope is enclosed for your convenience in returning the questionnaire to me by December 21, if possible. If you wish to discuss the study with me, please do not hesitate to contact me at 405-377-2000, Extension 244.

Sincerely,

Betty C. Fry
Doctoral Student

Zane K. Quible, Ph D
Dissertation Advisor

Enclosures: Questionnaire
Return envelope

APPENDIX B

PILOT QUESTIONNAIRE

QUESTIONNAIRE

YOUR TITLE _____

ORGANIZATION/FIRM _____

ADDRESS _____

1. Please describe briefly your major job function in your organization. _____

2. Please check the alternative(s) listed below which most clearly reflects your organizational structure.

- Local offices only
 Intrastate offices
 Interstate offices
 Regional offices
 National office
 National office/regional offices
 National office/regional offices/local offices
 International office
 Other; (please specify) _____

3. Please check the type of business that most clearly reflects your organization.

- Accounting
 Banking/Finance
 Education
 Employment placement (temporary and/or permanent)
 Energy-related
 Government
 Insurance
 Legal
 Manufacturing
 Medical
 Real estate
 Retailing
 Service (non-profit)
 Transportation
 Wholesaling
 Other; (please specify) _____

4. Please identify the number of employees in your organization locally by checking the appropriate blank.

	0 - 25
	26 - 49
	50 - 99
	100 - 199
	200 - 299
	300 or more

5. Please check the type(s) of automated office equipment and/or functions as they apply to your organization. If your company does not use the automated equipment or function, check the column Do Not Use. If your company is using the automated equipment or function, check the column indicating the number of years used. If your company plans to begin using the automated equipment or function before January, 1987, check the column Do Not Use and the column Plan To Add.

<u>Automated Equipment or Function</u>	<u>Do Not Use</u>	<u>Used Fewer Than 5 Years</u>	<u>Used Between 5 - 10 Years</u>	<u>Used 10 or More Years</u>	<u>Plan To Add</u>
<u>Word Processing</u>					
Nondisplay standalone.....					
One-line display standalone					
Standalone with CRT					
Shared logic system					
OCR readers for input					
Terminal on-line to computer					
Portable dictation units					
Desk-top dictation machines					
Central dictating/recording systems ...					
Computer-aided transcription					
Others; (please list below):					
1) _____					
2) _____					
3) _____					
<u>Data Processing</u>					
Mainframe computer					
Minicomputer					
Microcomputer(s)					
Time-sharing computer					
Computer service bureau					
Computer graphics					
Computer data bases					
Others; (please list below):					
1) _____					
2) _____					
3) _____					

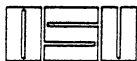
<u>Automated Equipment or Function</u>	<u>Do Not Use</u>	<u>Used Fewer Than 5 Years</u>	<u>Used Between 5 - 10 Years</u>	<u>Used 10 or More Years</u>	<u>Plan To Add</u>
<u>Reprographics</u>					
Facsimile	_____	_____	_____	_____	_____
Photocopier(s)	_____	_____	_____	_____	_____
COM (Computer Output Microfilm)	_____	_____	_____	_____	_____
Phototypesetting	_____	_____	_____	_____	_____
Photocomposition	_____	_____	_____	_____	_____
Laser printer	_____	_____	_____	_____	_____
Intelligent copier(s)	_____	_____	_____	_____	_____
Others; (please list below):					
1) _____	_____	_____	_____	_____	_____
2) _____	_____	_____	_____	_____	_____
3) _____	_____	_____	_____	_____	_____
<u>Records Management</u>					
Microfilm	_____	_____	_____	_____	_____
Microfiche	_____	_____	_____	_____	_____
Ultrafiche	_____	_____	_____	_____	_____
Aperture cards	_____	_____	_____	_____	_____
CAR (Computer Assisted Retrieval)	_____	_____	_____	_____	_____
COM (Computer Output Microfilm)	_____	_____	_____	_____	_____
Micrographic filing system	_____	_____	_____	_____	_____
Disk storage of records	_____	_____	_____	_____	_____
Others; (please list below):					
1) _____	_____	_____	_____	_____	_____
2) _____	_____	_____	_____	_____	_____
3) _____	_____	_____	_____	_____	_____
<u>Telecommunications</u>					
Computer-based message system	_____	_____	_____	_____	_____
Communicating word processors	_____	_____	_____	_____	_____
Communicating data terminals	_____	_____	_____	_____	_____
Telex	_____	_____	_____	_____	_____
PABX	_____	_____	_____	_____	_____
Electronic mail	_____	_____	_____	_____	_____
Communicating via satellite	_____	_____	_____	_____	_____
LAN (Local Area Network)	_____	_____	_____	_____	_____
External organization network	_____	_____	_____	_____	_____
Teleconferencing	_____	_____	_____	_____	_____
Others; (please list below):					
1) _____	_____	_____	_____	_____	_____
2) _____	_____	_____	_____	_____	_____
3) _____	_____	_____	_____	_____	_____

6. Please check the level of importance of the competencies needed by office employees in each automated function area your organization now uses or plans to add.

Competencies	Word Processing	Data Processing	Repro-graphics	Records Management	Telecommuni-cations
	Highly important Important Somewhat important Not very important Unimportant Not applicable	Highly important Important Somewhat important Not very important Unimportant Not applicable	Highly important Important Somewhat important Not very important Unimportant Not applicable	Highly important Important Somewhat important Not very important Unimportant Not applicable	Highly important Important Somewhat important Not very important Unimportant Not applicable
Communicating orally					
Receiving those who come to the office					
Communicating via telephone					
Filing alphabetically					
Filing numerically					
Spelling accurately					
Punctuating accurately					
Using correct grammar					
Composing messages					
Proofreading copy/screens					
Using reference sources					
Keyboarding					
Typewriting					
Formatting documents					
Transcribing from machine dictation					
Transcribing from shorthand dictation					
Using legible penmanship					
Performing math calculations					
Performing recordkeeping and/or bookkeeping activities					
Operating applicable equipment					
Handling maintenance of applicable equipment					
Selecting applicable software					
Using applicable software					
Handling communication between various types of electronic equipment					
Accessing databases					
Updating databases					
Programming; (please specify language):					
Others; (please list below):					
1) _____					
2) _____					
3) _____					

APPENDIX C

STUDY COVER LETTER



Oklahoma State University

COLLEGE OF BUSINESS ADMINISTRATION

STILLWATER, OKLAHOMA 74078
(405) 624-5064

January 16, 1984

Dear

SUBJECT: OFFICE AUTOMATION STUDY

Because of changing technology, the extent and the implications of the automation of office functions present timely topics for review. The questionnaire that I have developed to collect the data for my doctoral dissertation at Oklahoma State University addresses the automation of office functions in today's businesses in Oklahoma. The information yielded from this study will be of value to administrators and business educators who are developing curriculum and instructional programs for the training of your future office employees.

You and your organization have been selected to participate in this research study. Please take a few minutes of your valuable time to complete the enclosed questionnaire.

Your assistance with this research will be appreciated. A self-addressed, stamped envelope is enclosed for your convenience in returning the questionnaire to me by February 1, 1984.

Sincerely,

Betty C. Fry
Doctoral Student

Zane K. Quible, Ph D
Dissertation Advisor

Enclosures: Questionnaire
Return envelope

APPENDIX D

STUDY QUESTIONNAIRE

QUESTIONNAIRE

YOUR TITLE _____

ORGANIZATION/FIRM _____

ADDRESS _____

1. Please describe briefly your major job function in your organization. _____

2. Please check the alternative(s) listed below which most clearly reflects your organizational structure.

- Local offices only
 Intrastate offices
 Interstate offices
 Regional offices
 National office
 National office/regional offices
 National office/regional offices/local offices
 International office
 Other; (please specify) _____

3. Please check the type of business that most clearly reflects your organization.

- Accounting
 Banking/Finance
 Education
 Employment placement (temporary and/or permanent)
 Energy-related
 Government
 Insurance
 Legal
 Manufacturing
 Medical
 Real estate
 Retailing
 Service (non-profit)
 Transportation
 Wholesaling
 Other; (please specify) _____

4. Please identify the number of employees in your organization locally by checking the appropriate blank.

- _____ 0 - 25
- _____ 26 - 49
- _____ 50 - 99
- _____ 100 - 199
- _____ 200 - 299
- _____ 300 or more

5. Please check the type(s) of automated office equipment and/or functions as they apply to your organization. If your company does not use the automated equipment or function, check the column Do Not Use. If your company is using the automated equipment or function, check the column indicating the number of years used. If your company plans to begin using the automated equipment or function before January, 1987, check the column Do Not Use and the column Plan To Add.

<u>Automated Equipment or Function</u>	<u>Do Not Use</u>	<u>Used Fewer Than 5 Years</u>	<u>Used Between 5 - 10 Years</u>	<u>Used 10 or More Years</u>	<u>Plan To Add</u>
<u>Word Processing</u>					
Nondisplay standalone.....	_____	_____	_____	_____	_____
One-line display standalone	_____	_____	_____	_____	_____
Standalone with CRT	_____	_____	_____	_____	_____
Shared logic system	_____	_____	_____	_____	_____
OCR readers for input	_____	_____	_____	_____	_____
Terminal on-line to computer	_____	_____	_____	_____	_____
Portable dictation units	_____	_____	_____	_____	_____
Desk-top dictation machines	_____	_____	_____	_____	_____
Central dictating/recording systems ...	_____	_____	_____	_____	_____
Computer-aided transcription	_____	_____	_____	_____	_____
Others; (please list below):					
*1) _____	_____	_____	_____	_____	_____
*2) _____	_____	_____	_____	_____	_____
*3) _____	_____	_____	_____	_____	_____
<u>Data Processing</u>					
Mainframe computer	_____	_____	_____	_____	_____
Minicomputer	_____	_____	_____	_____	_____
Microcomputer(s)	_____	_____	_____	_____	_____
Time-sharing computer	_____	_____	_____	_____	_____
Computer service bureau	_____	_____	_____	_____	_____
Computer graphics	_____	_____	_____	_____	_____
Computer data bases	_____	_____	_____	_____	_____
Others; (please list below):					
*1) _____	_____	_____	_____	_____	_____
*2) _____	_____	_____	_____	_____	_____
*3) _____	_____	_____	_____	_____	_____

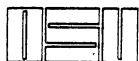
*Please list generic names of equipment or functions rather than brand names.

<u>Automated Equipment or Function</u>	<u>Do Not Use</u>	<u>Used Fewer Than 5 Years</u>	<u>Used Between 5 - 10 Years</u>	<u>Used 10 or More Years</u>	<u>Plan To Add</u>
<u>Reprographics</u>					
Photocopier(s)	_____	_____	_____	_____	_____
COM (Computer Output Microfilm)	_____	_____	_____	_____	_____
Phototypesetting	_____	_____	_____	_____	_____
Photocomposition	_____	_____	_____	_____	_____
Laser printer	_____	_____	_____	_____	_____
Intelligent copier(s)	_____	_____	_____	_____	_____
Others; (please list below):					
*1) _____	_____	_____	_____	_____	_____
*2) _____	_____	_____	_____	_____	_____
*3) _____	_____	_____	_____	_____	_____
<u>Records Management</u>					
Microfilm	_____	_____	_____	_____	_____
Microfiche	_____	_____	_____	_____	_____
Ultrafiche	_____	_____	_____	_____	_____
Aperture cards	_____	_____	_____	_____	_____
CAR (Computer Assisted Retrieval)	_____	_____	_____	_____	_____
COM (Computer Output Microfilm)	_____	_____	_____	_____	_____
Micrographic filing system	_____	_____	_____	_____	_____
Disk storage of records	_____	_____	_____	_____	_____
Tape storage of records	_____	_____	_____	_____	_____
Others; (please list below):					
*1) _____	_____	_____	_____	_____	_____
*2) _____	_____	_____	_____	_____	_____
*3) _____	_____	_____	_____	_____	_____
<u>Telecommunications</u>					
Facsimile	_____	_____	_____	_____	_____
Computer-based message system	_____	_____	_____	_____	_____
Communicating word processors	_____	_____	_____	_____	_____
Communicating data terminals	_____	_____	_____	_____	_____
Telex	_____	_____	_____	_____	_____
PABX	_____	_____	_____	_____	_____
Electronic mail	_____	_____	_____	_____	_____
Communicating via satellite	_____	_____	_____	_____	_____
LAN (Local Area Network)	_____	_____	_____	_____	_____
External organization network	_____	_____	_____	_____	_____
Teleconferencing	_____	_____	_____	_____	_____
Others; (please list below):					
*1) _____	_____	_____	_____	_____	_____
*2) _____	_____	_____	_____	_____	_____
*3) _____	_____	_____	_____	_____	_____

*Please list generic names of equipment or functions rather than brand names.

APPENDIX E

FOLLOW-UP COVER LETTER



Oklahoma State University

COLLEGE OF BUSINESS ADMINISTRATION

STILLWATER, OKLAHOMA 74078
(405) 624-5064

February 6, 1984

Dear

SUBJECT: OFFICE AUTOMATION STUDY

In mid-January, a questionnaire was mailed to you addressing the automation of office functions in businesses today in Oklahoma. The questionnaire was developed to collect data for my doctoral study at Oklahoma State University. The information yielded from this study will be very valuable to administrators and business educators who are developing curriculum and instructional programs for the training of your future office employees.

Your input is very important to this research. If you have not already returned your questionnaire, please take a few minutes of your valuable time to complete the copy that is enclosed. A stamped, return envelope is enclosed for your convenience.

Your response will be greatly appreciated and is needed by February 20, 1984.

Sincerely,

Betty C. Fry
Doctoral Student

Zane K. Quible, Ph D
Dissertation Advisor

Enclosures: Questionnaire
Return envelope

APPENDIX F

FOLLOW-UP MEMORANDUM



Oklahoma State University

COLLEGE OF BUSINESS ADMINISTRATION

STILLWATER, OKLAHOMA 74078
(405) 624-5064

February 20, 1984

MEMORANDUM

FROM: Betty C. Fry ^{bx} Doctoral Student
Zane K. Quible, Ph D, Dissertation Advisor

SUBJECT: OFFICE AUTOMATION STUDY

In January and again in February, I mailed you a questionnaire as a part of my office automation study. As of this mailing, I have not received your completed form.

Please take a few minutes of your valuable time to participate in this study by completing the enclosed copy and returning it to me in the enclosed stamped envelope by February 27. Your input will be greatly appreciated.

If you would like a copy of the information yielded from this study, please sign this form and return it with your questionnaire. This form will be detached before the results are tabulated.

Name

Address

VITA

Betty Crowe Fry

Candidate for the Degree of

Doctor of Education

Thesis: A STUDY OF SELECTED OKLAHOMA CITY AND TULSA, OKLAHOMA, BUSINESSES TO ASSESS COMPETENCIES NEEDED BY FUTURE EMPLOYEES IN AUTOMATED OFFICES

Major Field: Business Education

Biographical:

Personal Data: Born in Glenwood, Arkansas, May 27, 1936, the daughter, of Hiram N. and Mona E. Crowe.

Education: Graduated from Hot Springs High School, Hot Springs, Arkansas, in May, 1954; received Bachelor of Arts degree from Ouachita Baptist College in May, 1958; received Master of Science degree from Oklahoma State University in August, 1961; completed requirements for the Doctor of Education degree at Oklahoma State University in December, 1984.

Professional Experience: Teacher, Lakeside High School, Hot Springs, Arkansas, September, 1958, to May, 1960; Instructor, College of Business Administration, University of Arkansas, September, 1961, to May, 1964; Teacher, Tulsa Public Schools, August, 1964, to May, 1977; Assistant State Supervisor of Business and Office Education, State of Oklahoma Department of Vocational-Technical Education, July, 1977, to June, 1980; State Supervisor of Business and Office Education, State of Oklahoma Department of Vocational-Technical Education, May, 1980, to present.

Professional Organizations: American Vocational Education Association, Oklahoma Vocational Education Association, National Business Education Association, Mountain-Plains Business Education Association, Delta Pi Epsilon, Administrative Management Society.