THE IMPLEMENTATION OF WORD PROCESSING IN THE RICHMOND, VIRGINIA, METROPOLITAN AREA

by

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Dissertation submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

in

Vocational and Technical Education

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September, 1981

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ACKNOWLEDGMENTS

The researcher wishes to express her sincere appreciation to:

committee chairman, for her persistent guidance and encouragement during the completion of this study and to the rest of my committee for their contributions.

The Word Processing Association of Richmond for the professional and cooperative spirit in which they participated in the study.

IBM Corporation for providing an internship experience that greatly contributed to my knowledge of word processing.

, my friend and colleague, for her assistance with the data analysis.

the word processing specialist who so professionally processed the original draft of this document.

My pastor, for providing spiritual guidance and support.

, my daughter, for her invaluable assistance in the tabulation of the data.

The men in my life--my husband, , and my son, -- for their love, patience, and support during a very trying time of my life.

My mother, , who always encouraged me to be a good student.

God in Heaven for giving me the strength and the ambition to accomplish this task.

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Chapter I

INTRODUCTION

A revolution has taken place in the modern business office. Secretaries, who once were generalists, are now assuming specialized roles (Ober, 1972, p. 29). Today, secretaries whose work involves the preparation of correspondence and other business communications are called correspondence secretaries. Secretaries who handle a wide variety of administrative duties are called administrative secretaries.

Magnetic keyboards and electronic typewriters allow the modern secretary to automate the typing, revision, and storage of documents at phenomenal rates of speed. The vast quantity of paperwork being generated today is being processed, stored, and retrieved through the use of highly sophisticated systems of information processing and records management.

The impetus of the office revolution is word processing. The International Word Processing Association report prepared by the firm of Deutsch, Shea & Evans, Word Processing and Employment (1975), notes that:

> The traditional American response to shortages of trained people has been the development of advanced machines to ease the workload. Until recently, such machinery was to be

> found on the factory floor and later in the service industries. The electric typewriter, the copier, and the computer, however, began to change the office scene and word processing has now arrived as a new technology that will make as drastic changes in the traditional roles of secretaries, stenos, and typists as have occurred elsewhere in the workforce. (p. 1)

Word Processing Defined

The term "word processing" was originated in Germany in the mid-1960's by International Business Machine Corporation (IBM). It combined "input processing" (dictating by machine) with "output processing" (transcribing the dictated material on magnetic media and copying and distributing the material). International Business Machines Corporation (1977) defines word processing as:

> The combination of people, procedures, and equipment that transforms ideas into printed communications and that helps facilitate the flow of related office work. (p. 1)

The International Word Processing Association defines word processing as:

> A system of trained personnel, specific procedures, and automated equipment that provides more efficient and economical business communications and usually involves the transformation of information into a readable form. (IWP Word Processing Glossary, 1975, p. 27)

McCabe and Popham (1977) define word processing as:

> The transformation of ideas and information into a readable form of communication through the efficent organization of people, procedures, and equipment. (p. 173)

Other definitions of word processing have been proposed, but the precise definition depends upon the paperwork requirements of an organization and the extent to which the word processing system has been developed.

What is evident about word processing is that it is a significant force in emerging office management and occupational systems. According to Rosen (1977):

> Although word processing has not yet become a household term, its growth during the past decade has been phenomenal. It has become a part of office systems in companies ranging from the "Fortune 500" giants to small one- or two-secretary offices. (p. 16)

"Revenues from word processing equipment sales have jumped from $936 million in 1977 to $1.5 billion in 1978, when 120,000 units were acquired" (Dunn, 1979, p. 16). "By the end of 1978 well over 500,000 units were installed worldwide. Five years from now, annual installations will exceed that number" (Olivas & Murranka, 1979, p. 17).

The Word Processing Employment Market

Administrative secretary and correspondence secretary are only two of the new positions that have evolved from the word processing

office revolution. Others include word processing manager, word processing supervisor, word processing trainer, proofreader, photo-typesetting specialist, and word processing analyst. The following job classifications related to the word processing industry are now included in the Dictionary of Occupational Titles (U. S. Department of Labor, 1977):

203.582.030 Magnetic Tape/Card Operator

203.383.018 Magnetic Tape/Composer Operator

203.137.010 Supervisor, Word Processing

203.363.014 In-file Operator (CRT Operator)

According to the Bureau of Labor Statistics, (U. S. Department of Labor, 1979) clerical workers constitute the largest and fastest-growing occupational group. Employment growth in these occupations is expected to generate about 4.8 million new jobs between 1978 and 1990. Significant employment growth is anticipated for secretaries, typists, and receptionists. Openings for secretaries are expected to be three times the number of openings for any other clerical occupation. Not only is the traditional secretarial employment market growing, but the market for trained word processing personnel is growing as well. The tremendous growth rate of the word processing industry coupled with the projected increase in the size of the secretarial employment market clearly indicate the need for workers trained in word processing skills. Rosen and Fielden (1977) forecast:

> Perhaps the best sources of trained personnel for word processing occupations will eventually be found in public

> education. It is up to the colleges to add word processing courses and curricula to their existing programs in an effort to supply the business community with the talent that is now and will continue to be in demand. (p. 176)

According to Gleckner (1979):

> The move toward formalized word processing education in the schools of our nation has definitely become a reality. The demands of the business world for trained personnel in all phases of word processing are making a dramatic impact on business education . . . . (p. 32)

Statement of the Problem

Although the implementation of word processing in business, industry, and government has occurred at a rapid pace, the extent of such implementation varies from one geographic area to another. According to Anderson (1980), before word processing can be introduced into the curriculum, it first must be determined to what extent word processing has been implemented in the area the school serves. Limited research has been conducted on the implementation of word processing. Two recent studies (Rohrer, 1978; Larson, 1980) have been conducted on the status of word processing in different geographic areas, Pittsburgh and Arizona. However, because these were descriptive studies of word processing systems in two specific areas, they are not generalizable to other areas. No data are available about the current implementation of word processing in a major metropolitan area in Virginia.

Therefore, the purpose of this study was to determine how word processing is being implemented in businesses with word processing systems in the Richmond metropolitan area. A secondary purpose was to determine what plans these businesses have for systems expansion and for the application of emerging technologies.

This study addressed the following research questions:

1. How is the word processing concept being implemented in businesses with word processing systems in the Richmond metropolitan area?
2. What employment patterns exist in businesses with word processing systems in the Richmond metropolitan area?
3. What plans do businesses with word processing systems in the Richmond metropolitan area have for systems expansion and for application of emerging technologies in the next five years?

Significance of the Study

Although many high schools and colleges have begun to implement word processing instruction (Gleckner, 1979), the demand for trained workers for the word processing industry has not yet been met (Olivas & Murranka, 1979). The increased use of word processing coupled with an expanding technology necessitates that business and office educators do their part to supply the trained workers that industry will need. According to Moody and Matthews (1977):

> As progress comes to the business world, teachers must be prepared to redesign the curriculum, but it must be done from the foundation of careful assessment, accurate data and planning. The challenge lies in meeting both the needs of the traditional office and the automated office while preparing for continuous renovation of the curriculum to keep pace with the business world. (p. 47)

As Darst (1979) states:

> When the technology promises the extensive changes that are already evident in some word processing systems, we know that adjustments in our training programs will have to be made, particularly in the office skills. For most business teachers and students the challenge of word processing is to make reasonable compromises in view of the extreme adjustments that confront us. (p. 177)

Word processing has traditionally been used as a synonymous term with automatic typewriting because it originated with the introduction of the MT/ST (IBM Magnetic Tape Selectric Typewriter) However, shortly after its introduction as "the more powerful typewriter," business quickly learned that this new equipment, which could function as an automatic typewriter as well as a text-editor, would have to be used in a systems environment in order to be cost effective and productive. Hence, the birth of the word processing concept.

Word processing is a whole new concept of office system organization and layout, personnel structure, and equipment utilization with

specific procedures for document origination, processing, and distribution. In order for business educators to prepare their students effectively for their role in word processing, they must understand how the word processing concept is being applied in business in addition to the operation of basic pieces of equipment.

The research questions answered in this investigation will assist business and office educators in developing meaningful and relevant content for the preparation of individuals to enter employment in word processing in the Richmond metropolitan area in Virginia. Specifically, these data will have implications for word processing keyboard and concept training. Additionally, data collected will be of value to local word processing managers who wish to keep abreast of current trends. Information on current trends in word processing implementation will be useful to managers of word processing systems in making plans for future modification or expansion of such systems.

Definition of Terms

Because word processing is a relatively new technology, the definitions of some specialized vocabulary and abbreviations were pertinent to this investigation.

Administrative Support (AS). A system involving specialized secretarial teams which perform nontyping and paraprofessional tasks.

Automatic Typewriter. The simplest form of word processor used for repetitive output with little or no text editing.

Cathode Ray Tube (CRT). A video-display screen used for displaying text in word processing and computer systems.

Computer Output Microfilm (COM). Microforms produced directly from computer or word processing storage media.

Correspondence Secretary. A specialist who keyboards, edits, revises, and plays back correspondence and other communications on magnetic keyboard equipment in a word processing system.

Electronic Keyboard. A keyboard on which characters are generated or encoded electronically rather than mechanically.

Ergonomics. The science of adapting the working environment to the needs of the worker.

Forms Fill-in. The electronic completion of preprinted forms.

Intelligent Copier. An electronic copier/printer that utilizes a laser technology and has the capability of accepting hard copy, magnetic media, or computer input.

Information Processing. The electronic classification, storage, and retrieval of data required by business through the use of word processing and data processing systems.

International Information/Word Processing Association (IWP). A professional organization of word processing managers, vendors, consultants, and educators.

Keyboarding. Inputting information by manipulating a keyboard.

Open (Modular) Layout. An office design based on the principles of ergonomics; characterized by movable, modular partitions and work stations rather than permanent walls and traditional desks.

Optical Character Recognition (OCR). A process by which typed or printed characters are converted into input for a data or word processing system.

Principals. Those members of a business organization who require correspondence and administration support.

Records Processing. A system of classifying, manipulating, and storing files of information through the use of information processing equipment.

Shared-Logic System. A word processing system in which several terminals share the memory and "intelligence" of a central processing unit.

Telecommunications. Transmission of documents over telephone lines using communicating word processing equipment.

Text Editing. Changing or rearranging text in storage, including reading back, scanning, deleting, substituting, inserting, and reformatting.

Word Processing (WP). A system of trained personnel, specific procedures, and automated equipment that provides more efficient and economical business communications; usually involves the transformation of information into a readable form.

Word Processing/Office Systems (WP/OS). A term referring to the total information handling system of an organization, including word processing, administrative support, micrographics, photographics, data processing, and communications.

Word Processing System (WPS). A word processing installation or center; two or more supervised correspondence specialists who work in close proximity.

Word Processing Manager. One who plans and manages the present and future word processing needs of the organization and who studies and proposes modifications to the system.

Word Processing Supervisor. One who supervises, plans, schedules, directs, and controls the daily activities of the word processing system; maintains production records; and prepares production reports.

Summary

A new revolution has taken place in the modern business office. The impetus of this revolution is word processing. Word processing is a system of trained personnel, specific procedures, and automated equipment that provides more efficient and economical business communications. The tremendous growth rate of the word processing industry coupled with the projected increase in the secretarial employment market clearly indicates the need for workers trained in word processing skills.

Although many educational institutions have begun to implement word processing instruction, the demand for workers trained in word processing skills has not yet been met. In order for business educators to prepare their students effectively for careers in word

processing, they must understand how word processing is being applied in local businesses.

No data are available about the current implementation of word processing in a major metropolitan area in Virginia. Therefore, the problem of this investigation was to determine how word processing is being utilized in businesses with word processing systems in the Richmond, Virginia, metropolitan area.

The research questions answered in this investigation will assist business and office educators in developing meaningful content for their word processing instructional programs. In addition, the data collected will be of value to local word processing professionals who wish to keep abreast of current trends in word processing implementation.

Chapter II

AN OVERVIEW OF WORD PROCESSING

This study dealt with the implementation of word processing in businesses with word processing systems in the Richmond metropolitan area. A review of the current trade literature on word processing technology is presented in this chapter. The following topics are discussed:

- Organization of Word Processing Systems
- Types of Word Processing Equipment
- Types of Documents Processed in Word Processing
- Sources of Input for Documents Processed
- Titles Used for Word Processing Operators
- The Future of Word Processing

Organization of Word Processing Systems

> Configurations and combinations of word processing systems vary from company to company just as the objectives of the organization, its staffing needs, and its equipment needs vary. These variations serve to emphasize the flexibility of the word processing concept and the ease with which word processing systems can be tailored to suit the needs of a particular organization. (McCabe & Popham, 1977, p. 46)

Centralized Systems

Most early word processing systems were centralized. Centralized word processing continues to fulfull the needs of many companies, especially those with large volumes of paperwork, such as insurance companies (Waterhouse, 1979, p. 54). The original concept of word processing centralization was based on the principle that specialists could produce more work in a shorter period of time and that the quality of work would be improved. Highly specialized grouping of activities allows for maximum productivity with a minimum of interruptions (Rosen & Fielden, 1977, p. 58).

In many organizations, only the correspondence portion of word processing/administrative support has been organized with specific job descriptions, career paths, and professional supervision (Cassady, 1980, p. 14). However, as more and more organizations come to realize the benefits of supervised correspondence specialists, they begin to apply the principles of specialization to administrative support functions as well.

A pure word processing/administrative support system is one with both the administrative and the correspondence support staff organized and supervised. All correspondence work is handled by the correspondence specialists; administrative secretaries handle the telephone, filing, mail, and other administrative tasks.

Decentralized Systems

Although the centralized mode of word processing is considered the most cost effective, there may be situations involving confidential or highly technical work where principals need to work closely with correspondence personnel. In these instances, centralized word processing may not be the answer (Waterhouse, 1979, p. 62). Laughlin of IBM acknowledges that "centralization was good for some people but terrible for others. It took us a while to recognize that there are differences in word processing centers" ("The Office of the Future," June 1975, p. 56). Decentralized word processing systems are similar to centralized ones, except that they involve a smaller number of principals. The system is located in close proximity to the principals, who very often form a department or subset of the organization.

Because administrative support systems are generally located close to the principals they support, there is little difference between a centralized and decentralized administrative support system other than size and, possibly, dedication to a specific function or department.

Work clusters represent another form of decentralizated word processing system that is rapidly gaining popularity as an effective alternative for offices with a small number of employees, for offices that must maintain close contact between principals and support personnel, and for offices processing technical or confidential communications (Waterhouse, 1979, p. 63). A work cluster or team is a small group of correspondence and administrative personnel who work

together to provide adminstrative support services to a specific department or function within an organization. Work clusters combine the advantage of task specialization with personal contact and dedication.

Layout of Word Processing Systems

A characteristic of word processing systems that relates to system organization is the office layout. Because word processing systems must be flexible and adaptable to change, the open (modular) office layout is best suited for the word processing environment. According to Quible (1977):

> Large open areas are more efficient than small, compartmentalized areas, so instead of using permanent walls to design work areas, extensive use will be made of movable partitions and modular furniture. Not only are these arrangements more flexible, but they also facilitate frequent changes in work processes. (p. 25)

Assignment of Correspondence Tasks to the Word Processing System

Because the original word processing equipment was designed chiefly for the production of repetitive (form) letters, an early function of the word processing system was to produce form letters. Today, this application still accounts for much of the work done in word processing systems (Rosen & Fielden, 1977, p. 138). Later, organizations with word processing equipment discovered that many

other types of documents could be produced more efficiently on the equipment. Originators were then encouraged to send all their correspondence work to the word processing system.

On the other hand, some organizations utilize the word processing system for special applications only. At the Norfolk Naval Shipyard in Portsmouth, Virginia, for example, the word processing system is used for report preparation only. Correspondence and other one-time documents are produced at the site of origin. Some companies utilize the word processing system to handle the correspondence requirements of principals who do not have private secretaries. In other instances, the word processing system is used to handle overflow typing and to assist during secretarial vacation time.

Types of Word Processing Equipment

The earliest word processing equipment was the automatic repetitive typewriter. One of the earliest manufacturers of the equipment was the American Automatic Typewriter Company, which marketed the Auto-Typist, a paper-tape typewriter. The automatic paper-tape typewriter offered the advantages of low-cost, high-speed playback and easy operation. Unfortunately, these machines offered little or no text-editing capability (ability to revise and correct copy) because the holes in the paper-tape could not be filled in when changes were necessary (Cassady, 1980, p. 75).

Standalone Text-Editors

Text-editors that process words without the use of an external computer are called standalones. Standalone text-editors include non-display (blind) equipment and display equipment.

Nondisplay Equipment. Nondisplay text-editors utilize a magnetic recording medium (magnetic card or cassette tape) to store text. As the information is keyboarded, it is recorded on the hard (paper) copy as well as on the storage medium. A major drawback of this type of equipment is that the operator is unable to view the changes that are being made to the memory of the machine. The revising and editing of documents is much more difficult on this type of equipment than on visual display equipment.

Visual Display Equipment. Visual display equipment uses either a cathode ray tube (CRT screen) or a one-line display screen. The display enables the operator to keyboard in a paperless mode because the text is visible on the screen as it is being entered and revised. Accordingly, the display is commonly called "the window into memory" and facilitates the revision of documents. This type of equipment is recommended when the workload consists of lengthy documents that are frequently revised. Most visual display equipment uses a floppy disk storage medium; one-line display equipment use magnetic cards, cassettes, and minidisks.

With repsect to programming, word processing standalone equipment is said to be either hardware-based or software-based. Equipment that is hardware-based (or hard-wired) has been programmed internally by

the manufacturer. Equipment that is software-based is programmed by the insertion of a removable software diskette. The system diskette can be updated as new programs are developed.

> In all likelihood, information systems will evolve from the presently hardware-based concepts (almost exclusively programmed by the manufacturer) to the software-based types which offer greater flexibility. ("Looking Towards Office Automation," 1979, p. 136)

Computer Word Processing

Forms of computerized word processing include communicating word processing systems, shared-logic systems, on-line computer word processing systems, and time-sharing word processing systems.

Communicating word processors. Some word processing machines, called communicating text-editors, have the capability of sending and receiving material to and from a computer or another word processor. Communicating text-editors are used to transmit documents over telephone lines from one location to another in a matter of minutes.

> The favorable outlook for such communicating word processing units is attributable to decreasing communication costs, rising mail costs, and the labor-intensive mail service. The value of communicating word processing units is enhanced by flexibility since any two units can transmit and receive material between them: computers, TWX/TELEX, and communicating word processors. (McCabe & Popham, 1977, p. 109)

Shared-logic Equipment. Another type of computer word processing system involves the use of several terminals that share the logic or "intelligence" of a central processing unit (CPU) or minicomputer. This type of computerized word processing system is called a shared-logic system. The equipment components of a shared-logic system consist of several terminals, a minicomputer, and separate printers. "Shared-logic systems are used in both centralized and decentralized word processing systems" (Waterhouse, 1979, p. 132).

"An alternative to a shared-logic system is a distributed processing system." ("Which Is Better: Shared-logic Or Distributive Processing?" 1981, p. 36). In this type of system, terminals are interconnected; in addition, each terminal has its own logic and storage capability. In other words, the system logic is distributed rather than centralized.

The concept of distributed processing is not new; it has been used for a decade by data processing. Similarly, word processing users have found the need to utilize distributed processing systems for word processing applications.

On-line computer word processing systems. On-line computer word processing involves the employment of text-editing programs on the user's in-house computer system. This option may not be cost effective unless there is an extensive need for text-editing with many terminals being linked into the system.

The decision to invest in a word processing application for the on-going computer system may involve the purchase of

> additional equipment for the computer system such as disks, core memory, transmission control units, and possibly printers with upper- and lower-case capability. One must also consider the additional systems programming and applications programming effort that will be required to both install and maintain the word processing applications. (Robek, 1976, p. 22)

Photocomposition Equipment

Composing, photocomposition, or phototypesetting equipment may also be found in a word processing system. Phototypesetters are used to make layouts for photographic copy for offset reproduction (Mason, 1979, p. 40). Phototypesetting equipment is available in standalone models or as peripheral equipment that interfaces with a word processor or a computer. Since 60 percent of the cost of typesetting comes from the rekeyboarding of copy, proofreading, and correcting errors, printshop costs can be substantially reduced by in-house photocomposition (McCabe & Popham, 1977, p. 14).

Types of Documents Processed in Word Processing

Although the keyboarding needs of one business organization may at first seem very different from those of another because of the kind of business or service provided, Rosen and Fielden (1977, p. 177) found that the types of documents produced in a word processing system fall into five broad categories: correspondence, repetitive letters, reports, phototypesetting, and forms and statistical. Citing a Modern Office Procedures journal study, they identified the percentage each

category represents of the total correspondence workload. This information is presented in Table 1.

Word processing originated with the development of the automatic typewriter and the production of repetitive letters. Consequently, this application accounts for a significant portion of the work done on word processing equipment today. The analysis reported by Rosen and Fielden (1977) was based on a 1973 study. However, with the capabilities of today's modern equipment, more emphasis is likely to be placed on other applications such as forms and statistical typing, as well as phototypesetting.

Sources of Input for Documents Processed

Longhand is the most common source of input for documents processed in a word processing system. Rosen and Fielden (1977) and Cassady (1980) estimate that longhand accounts for as much as 75 percent of total word processing input. Although longhand is the slowest and most expensive method of input, it is convenient and easy for word originators.

Machine dictation is the input mode best suited to a word processing system. Current trends indicate that machine dictation is gaining more acceptance as companies recognize its advantages (Bergarud & Gonzalez, 1978, p. 32). Lewis (1978) found in his study that the centralized dictation system was the most frequent source of input for correspondence after the organization's conversion to word processing and the training of the word originators.

Table 1

Documents Processed in Word Processing

Type of Document	Percentage of Total Workload
Correspondence	36
Repetitive Letters	30
Reports	26
Phototypesetting	4
Forms and Statistical	4

Source: Rosen & Fielden, 1977.

Another popular source of input for word processing is the typed draft. This source of input represents an unnecessary duplication of effort, since the typed document must be rekeyboarded by word processing personnel. Optical scanning technology (OCR) can be used to eliminate this duplicated effort.

"Imagine a machine capable of reading typewritten material and then transferring it at electronic speeds directly into the memory of a word processor" (Barber, 1980, p. 29). The OCR scanner or page reader is a machine that reads scannable input (copy typed on a Selectric machine containing an OCR element) and converts it into electronic impulses that are transferred to magnetic storage media. "A primary justification for installing an OCR page reader in a word processing environment is the relative amount of original keyboarding vs. editing/formatting performed by the word processing operator" (Manji, 1979, p. 34). It is estimated that as much as 75 percent of an operator's time is spent keying in text. The OCR device feeds in copy at rates of 500 to 1,000 words per minute; a word processing operator's average manual input speed is 60 words per minute. For this reason, interest in OCR equipment among word processing vendors and users is escalating (Barber, 1980, p. 30). Some experts believe that OCR is only a temporary solution to the input problem, since the paperless office is inevitable, but paper will probably be around for some time to come and OCR will remain a viable input alternative.

Titles Used for Word Processing Operators

Many organizations have created new positions for word processing operators. At present there is no standardization among the job titles for these positions. The 1975 International Word Processing (IWP) report prepared by the firm of Deutsch, Shea, & Evans, "Word Processing and Employment," revealed that 91 different titles were being used by the organizations they surveyed to describe persons who operate word processing equipment. The industry is apparently making some progress toward standardization, since today the range of titles for word processing operators is much smaller. The 1979 International Word Processing (IWP) survey of 1,103 word processing managers identified only 13 job titles being used for word processing operators. This 1979 survey was also conducted by the firm of Deutsch, Shea & Evans.

Other Jobs that Have Been Created for Word Processing

Just as the advent of data processing necessitated the creation of new jobs to support the industry, the advent of word processing has necessitated the creation of word processing support positions. In answer to the question "Will word processing create new job categories?" 73 percent of the 278 respondents answered affirmatively to the 1975 word processing and employment survey conducted by the firm of Deutsch, Shea & Evans for the IWP.

Word processing has already created new job categories.

With the continued research and development and the ever-

broadening scope and expansion of word processing, it is inevitable that new job categories will be created in the future. (Deutsch, Shea & Evans, 1975, p. 14)

The Future of Word Processing

Although bold moves have been made in automating the office, only the beginning stages of office automation have been realized. The near future offers the administrative manager incredible opportunities to make the office an infinitely more productive information center than it is today (Ferrani, 1979, p. 34).

Recent technological advances in the word processing industry are predicted to affect the future of the industry dramatically. One of the major areas of progress in equipment development was the introduction of the CRT screen to the product line.

Use of CRT Screens

The display text-editor was rapidly accepted by the industry even though this type of equipment costs twice as much as nondisplay equipment. It is much faster and easier to use; the keyboard is separated from the printer (typewriter) so that a page can be printed out while the operator works on the next page ("The Office of the Future," 1975, p. 50). Predictions are that all support personnel will use terminals in the office of the future.

The Continental Illinois Bank has compensated for the unavailability of stenographers by setting up a terminal-based cottage industry.

People transmit and receive information via telephone operating terminals out of their homes (Dunn, 1979, p. 26).

Pake, head of Xerox Corporation's Palo Alto Research Center, says that in 1995 there will be a terminal with a keyboard sitting on his desk. He continues, "I will be able to call up documents on the screen, or by pressing a button, I can get my mail or messages" ("The Office of the Future," 1975, p. 50). Everyone agrees that the office systems of the future are coming, but can desk-top terminals be made "friendly" enough so that executives will use them? Herzog (1980, p. 16) notes that Carlisle, president of Office of the Future, pointed out, "You can lead an executive to a terminal, but you can probably only get him to drink". Herzog, editor of Words magazine, further suggests that more likely than not the executive will have someone else operate the terminal to access what information is needed. Whether this person is the executive secretary or an information specialist, it is clear that this individual must have special skills.

Although the executive might not use a terminal in the office of the future, the executive will surely use the telephone. For this reason, IBM Corporation has been conducting developmental research on the integration of as many functions as possible into the touch tone telephone. The phone is connected to a computer as well as to an administrative work station for dictation. It can be used as a calculator, and it can automatically make a call for the executive. A six- or eight-line display is attached to the telephone for use in querying a reference library ("The Office of the Future," 1975, p. 84).

Use of Electronic Mail/Telecommunications

According to Connell (1978): "The basic underlying technology in the Office of the Future concept is not the electronic computer, but rather telecommunications. The objective is to improve communications flows and telecommunications is the medium" (p. 38).

Most word processing equipment has been designed to move information inside the office. But the office is also gaining powerful links to the outside world ("The Office of the Future," 1975, p. 51). The development of electronic document systems has been stimulated by the increasing costs of processing paperwork, including mail costs, as well as the increasing need for accurate, timely information. It is estimated by the Yankee Group, a technical marketing reserach firm, that by 1982 the average cost of an electronic message will be 50 cents (Dunn, 1979, p. 16).

> By 1985 users will be able to choose among a variety of equipment for electronic document transfer, depending on their information requirements. Selection criteria will include such factors as volume of message traffic, quality requirements, amount of graphic transmission as opposed to text, and special requirements for speed of output and input (Lavery, 1977, p. 6)

Included among the ways to transmit text and graphics electronically will be:

- From communicating word processing equipment. The number of installed communicating word processors is expected to increase by 100 percent through the early 1980's (Kutnick, 1978, p. 157).

- From facsimile equipment. Facsimile equipment is used to send hard copies of documents over telephone lines at the rate of two minutes per page (McCabe & Popham, 1977, p. 124).

- From electronically transmitted letter services. Western Union (Mailgram) and the U. S. Post Office (Intelpost) are now offering electronic mail services (Rivers, 1981, p. 20).

- From local networks. Various types of automated office equipment can be linked together to provide greater integration of word/information/data processing functions (Rivers, 1981, p. 20).

- From larger networks. Worldwide communications services are provided through publicly and privately owned telecommunications switching networks that use combinations of land lines, microwave transmission facilities, and satellites to send messages anywhere (Rivers, 1981, p. 42).

- From copying and duplicating machines. Once an electronic message is received, paper copies will be needed for personnel who do not have screens. Intelligent copiers/printers accept both hard copy and magnetic input and print at speeds from 10 to 20 pages per minute. These copiers/printers have internal printing and formatting devices and can communicate with other printers ("Intelligent Copying Is Growing Up," 1980, p. 60).

- From printing and phototypesetting equipment. One of every eight word processing managers surveyed by Modern Office Procedures in 1975 said that composing and typesetting applications were being planned. This application was the one most often mentioned by the respondents ("Typesetting In the Office Comes of Age," 1976, p. 33).

- From Telex and TWX equipment. This equipment will be used for both input and output of specialized communications. (McCabe & Popham 1977, p. 24).

- From OCR scanners. Typewritten or graphic hard copy communications will be transmitted by optical character recognition devices (McCabe & Popham, 1977, p. 24).

Fiber optics is a new technology that will be crucial to the future of the telecommunications industry. Unlike conventional communications cables, fiber optical cables are made of glass and offer the following advantages:

- Low signal losses over long distances
- Unlimited transmission capacity for certain fiber types
- Ability to carry optical as well as data transmissions
- Greater mechanical flexibility due to reduced cable size and weight
- Ability to resist electromagnetic interference ("Fiber Optics: New Inroads into Communications," 1980, pp. 44-46).

Use of Micrographic Filing Systems

Information storage and retrieval is an important office function that is frequently handled by the word processing system. The rising cost of paper, as well as the space required to file it, has created the need for an alternative to the file cabinet. "On the average, the creation of a four-drawer file for documents can cost over $600; the annual cost of maintaining it ranges from $250 to $750" (McCabe & Popham, 1977, p. 133).

A common alternative to the storage of paper documents in file cabinets is the use of micrographic filing systems. Micrographics is the process of producing a miniature copy of a document on file. According to Waterhouse (1979, p. 151), microfilm and microfiche reduce storage space by as much as 98 percent. The market for micrographics is expected to grow to $2 billion by 1980 as companies begin using microforms for active and inactive business records. Despite the increasing popularity of micrographics, users are experiencing some problems with these systems. "In many ways microforms are inferior to paper. Special readers are required; images are poor; and they are

hard to manipulate and can't be erased or annotated" ("The Office of the Future, 1975," p. 51).

COM (Computer Output Microfilm) is the process of recording the output of a computer system on film rather than on paper. Microforms can also be produced directly from the magnetic storage media used in word processing systems. "There's a new records management acronym you should be hearing more of in the future: WPOM--Word Processing on Microfilm" ("Looking Towards Office Automation," 1979, p. 134).

Microforms can easily be filed and retrieved through Computer-Assisted Microfilm Retrieval (CAR) systems. CAR systems link a microfilm retrieval terminal to the on-line computer data base.

> A computerized micrographics system is helping the Police Department in Orange, Calif., handle more active records with fewer personnel. . . . Records can now be retrieved faster and more reliably with substantially reduced requirements for storage space and clerical personnel. ("Computerized Micrographics Saves Space," 1981, p. 118)

The Integration of Systems

Today's word processing equipment systems consist of a mixture of various standalone machines, each designed to perform a specific independent function. "Now, the first links are beginning to be made merging the standalones into embryonic office systems and leading to the office of the future" ("The Office of the Future," 1975, p. 56). Predictions are that office systems of the future will be totally

integrated. "Word processing will be tied to typesetting, microfilming, data processing, electronic mail, and other office services (Stedman, 1979, p. 83). According to Vadnais of 3M Corporation ("Word Processing Heads Toward Integrated Office Systems," 1979), most offices are not ready for complex integrated systems networks. "But," he concedes, "they are ready for using one or more elements that will lead to such a system eventually" (p. 105).

One of the most frequently predicted future developments is the merger of word and data processing systems to provide an integrated information processing system. The impact of data processing technology is already being felt in the word processing industry in the form of similar terminology, system applications, and personnel structure. According to Greenblatt (1976):

> It is conceivable that in the years to come the total processing effort for systems such as accounting, order entry, inventory control, sales, and financial analysis will be designed to interact with a secretarial staff supported by a computer as well as word processing equipment. The administrative and typing functions in such thoroughly integrated systems would fit into the work pattern in a totally different way. (p. 12)

Successful integration of the technologies in the future will depend on the willingness of office systems personnel to be flexible and adaptable to change. Connell (1979), executive director of the Office Technology Research Group, states: "To be successful, any

attempt to interconnect technologies will require coordinated planning--in fact, a level of planning never before attempted in the office." (p. 124)

Summary

The organization of word processing systems was considered in this investigation. As reported in the trade literature, two common forms of word processing organization are centralized and decentralized word processing. Word processing systems are best suited for an open office layout.

The assignment of correspondence tasks to the word processing system was considered in this investigation. According to the trade literature, some organizations utilize the word processing system for special applications only; other organizations submit all correspondence work to the word processing system.

Types of word processing equipment likely to be used in the Richmond metropolitan area in Virginia were identified. Equipment identified through the trade literature included standalone text-editors, which process words without the use of an external computer. They include display and nondisplay systems. Standalone word processing equipment is either hardware-based or software-based. Types of computer word processing are communicating word processors, shared-logic systems, on-line word processing systems, and time-sharing systems.

The types of documents processed in a word processing system were considered. Five categories of documents were reported in the trade literature: correspondence, repetitive letters, reports, phototypesetting, and forms and statistical typing. Longhand is the most common source of input for documents produced in word processing, although machine dictation is the input mode preferred by word processing professionals. The typed draft is another popular source of input that can be combined with OCR technology to avoid unnecessary retyping.

Titles used for word processing operators were identified in this study. The review of the trade literature suggests that there is still no standardization among word processing job titles. Just as new jobs were created for the data processing industry, new positions are also being created for word processing.

One of the objectives of this study was to investigate the future of word processing in Virginia. The trade literature suggests that greater emphasis on the use of screens and terminals, the use of telecommunications, and the use of micrographics can be expected in the future.

Predictions are that the office systems of the future will be totally integrated. However, successful integration of the technologies will depend on the willingness of office systems personnel to be flexible and adaptable.

Chapter III

REVIEW OF LITERATURE

This investigation centered around businesses with word processing systems in the Richmond metropolitan area. The specific factors that were investigated were described in Chapter II, "An Overview of Word Processing." Some of these factors have been studied in word processing research previously conducted by educational and business researchers. A review of this research is presented in this chapter.

Organization of Word Processing Systems

When the word processing concept was originally formulated, the only form of word processing organization that was considered cost effective and productive was the centralized one. Therefore, most early word processing systems were centralized for both word processing and administrative support services. Although parallel word processing/administrative support structures were considered desirable, the implementation of administrative support systems has progressed at a slower rate than word processing support. After examining the impact of centralized word processing systems, word processing vendors and consultants began to realize that the centralized mode of word processing/administrative support was not necessarily the best approach for all organizations, particularly in instances when

specialized departmental or technical needs had to be met. Consequently, the decentralized mode of organization, which includes departmental satellites and work groups, is gaining in popularity.

A study by Rohrer (1978) of twelve "Fortune 500" companies utilizing word processing in the Pittsburgh area indicated that the most frequent organizational preference was for the departmental minicenter. The centralized geographic center was next in frequency. The minicenter serving multiple departments was reported by two of the respondents, and the work group approach existed in only one organization.

Even though the population was limited, Rohrer's data indicate that while a small proportion of centers are geographically centralized (27 percent), a larger proportion (62 percent) are centralized by department. Her findings suggest a compromise between the centralized geographic approach and the decentralized functional approach. A large percentage of the respondents (42 percent) reported that their organization had a separate administrative support function.

In 1979, the firm of Deutsch, Shea & Evans conducted a study of the International Word Processing Association (IWP) membership. There were 1,100 responses. Although the study did not address the question of centralization versus decentralization, 42 percent of the respondents reported that they had a centralized administrative support function.

Word Processing Systems (WPS), a professional journal that serves the word processing industry, periodically surveys its readers to

assess the current status of the industry and to project plans for the future. Walshe (1980), reporting results of the 1979 study of 259 readers, noted that 64 percent of the respondents reported that their word processing system was centralized, thus indicating the continuing popularity of the centralized approach. However, the fact that 17 percent reported a decentralized organizational structure and 19 percent reported a combination centralized/decentralized operation indicates a need for decentralization by a number of organizations. Fifty percent of the responding organizations reported the implementation of administrative support systems.

Late in 1979, a "National Study of Word Processing Installations in Selected Business Organizations" was conducted by Delta Pi Epsilon (DPE), the honorary graduate fraternity in business education (Scriven, Holley, Wagoner, & Brown, 1980). Sixty-two percent of the respondents reported that they had a centralized form of organization. This figure is similar to the percentage (64 percent) that Walshe reported for the Word Processing Systems study (1980). This finding is in contrast to the trend toward decentralization reported in the popular literature.

The differences in organizational structures that have been reported suggest that both centralized and decentralized organizational modes are feasible, depending on the goals and the functions of the system. The respondents to the DPE study (Scriven et al., 1980) most frequently (42 percent) reported having decentralized administrative support systems. Data collected for this study, as well as the

previously cited studies, show that administrative support systems have not been developed as extensively as word processing support systems.

Word Processing Equipment Utilization

The trade literature on word processing equipment utilization emphasizes the increasing growth in number of installed CRT display standalones and the diminishing utilization of blind standalones. Forty-five percent of the organizations surveyed by Word Processing Systems (WPS) in 1979 reported using CRT display standalones, while only 25 percent reported using blind standalones (Walshe, 1980).

Another trend anticipated in the trade literature is the increased utilization of shared-logic systems. A small percentage (9 percent) of the respondents to the WPS study had installed shared-logic systems. Although the other research studies have not investigated the use of shared logic, this study does.

The growing number of in-house photocomposition installations is also reported in the trade literature. Organizations participating in the Deutsch, Shea & Evans study (1979) were asked about the use or possible future use of photocomposition. Twenty-one percent of the respondents reported the use of photocomposition; 39 percent indicated that their organization had investigated the possible use of photocomposition. Seven percent of the respondents to the WPS study plan to install photocomposition equipment.

Although many organizations are planning to install photocomposition equipment in their word processing systems, many other organizations consider photocomposition a function of their printing departments. This phenomenon has not been discussed in the trade literature.

Types of Documents Processed In Word Processing Systems

As reported in the trade literature, correspondence production was the primary document application for which word processing systems were originated. Over the years, other applications have been developed. A large majority (86 percent) of the principals who participated in the Delta Pi Epsilon study (Scriven, et al., 1980) indicated that their word processing systems were used to produce correspondence. Another application that was mentioned by the respondents was forms fill-in.

The organizations responding to the Rohrer study (1978) indicated that memos, letters, repetitive documents, reports, and statistical text were the most frequent applications for their word processing systems. Forms, technical text, and address lists were reported as next most frequent.

New and different applications have been developed for word processing since its early beginning. Accordingly, new hardware and software advancements have been designed to handle the new applications. Mathematical (calculating), statistical (columnar), and technical (equation) software packages are available for special applications.

The new equipment is also able to handle forms fill-in and the complex manipulation, revision, and editing of text. Paper handling (even for letters and envelopes) is no longer required. As the equipment is becoming more sophisticated, word processing systems are taking on more sophisticated applications.

The input mode originally proposed for the word processing environment was machine dictation. Machine dictation as an input mode is theoretically more efficient than other modes of input because the principal and the secretary are not both involved in the input process and because properly dictated input is easier to transcribe than longhand input (since explicit instructions can be given regarding spelling, content, and special punctuation). The use of dictated input has not been as successful as originally planned largely because of principals' resistance to change and their reluctance to accept dictation training.

Lewis (1977) conducted a study to determine the effect of word processing on correspondence origination. A two-part questionnaire was developed to survey word processing supervisors and word processing users. The survey population consisted of individuals employed by organizations with word processing systems that were included in the mailing list of an unspecified word processing magazine. From a total of 1,000 questionnaires, 320 usable returns were obtained.

Prior to the word processing conversion, personal handwriting was the input source for 46 percent of the letters produced in the organizations. After the word processing conversion, direct telephone

dictation accounted for 38 percent of the letters produced, while handwritten input accounted for only 26 percent. Business letter orginators who received dictation training and/or a user's manual were more likely to dictate their correspondence than business letter originators who had received neither dictation training nor a word processing user's manual.

Machine dictation is the recommended mode of input into a word processing system. The study completed by Lewis (1977) has important implications for the training of business letter originators in the use of machine dictation equipment. Originators who have been trained to dictate will be more likely to dictate their correspondence.

In the study by Rohrer (1978), dictation was the most frequent source of input for memos, correspondence, form letters, and paragraphs. Longhand was the most frequent input source for short reports, statistical reports, address lists, and forms. The typed rough draft was the most frequent input source for medium and long reports.

> It is expected that the (input) source for medium or long reports would be either longhand or possibly shorthand, either of which could then be transcribed into rough draft form. This is realistic because the word originator is likely to make many revisions in the first writing of a report. Until he becomes skilled in the art of dictation, longhand will continue to be a convenient initial mode. (Rohrer, 1978, p. 90)

Rohrer's research points out other variables that have affected the acceptance of machine dictation as an input mode--particularly the length and difficulty of the material. Originators who are not experienced with proper dictation procedures will be reluctant to dictate long or complex documents.

The respondents to the Word Processing Systems study (Walshe, 1980) indicated that handwritten input accounted for 52 percent of the workload, while dictated input accounted for only 35 percent of the total workload. Although handwritten input continues to be popular, dictated input seems to be gaining in popularity. These trends will differ from system to system depending upon the emphasis on dictation training. The Delta Pi Epsilon study (Scriven, et al., 1980) revealed that longhand was the most frequent source of input to the word processing systems included in the study.

Titles Used for Word Processing Personnel

Although many organizations have created special positions for word processing operators, there is at present no uniformity in job titles for these positions. As previously noted, the 1975 IWP survey (Deutsch, Shea & Evans) revealed 91 different job titles for word processing operators. The 1979 IWP survey (Deutsch, Shea & Evans) of word processing operators revealed only 13 job titles for word processing operators. This information is presented in Table 2.

The Rohrer study (1978) also investigated titles used for word processing operators. Rohrer's study revealed 17 different job titles

Table 2

Titles Used for Word Processing Operators

Job Titles of WP Operators	Percentage of Respondents
WP Operator	25
Correspondence secretary	18
WP specialist	15
WP secretary	11
Secretary	10
Operator (Mag Card, etc.)	9
WP typist	6
Stenographer/clerk typist	6
Word processor	4
WP technician	3
Dictating machine transcriber	3
Clerk	3
Editor/text edit operator	2

Source: Deutsch, Shea & Evans. Human Resources and Word Processing. International Word Processing Association, Willow Grove, Pennsylvania, 1979, p. 7.

for word processing operators; these titles are presented in Table 3. Although it is apparent that the job titles for the industry are not standardized, there seems to be less of a disparity at this point in time than in the past. Word processing operator was the job title most frequently reported in the Delta Pi Epsilon research as well as in the two studies cited above.

Larson (1980) reported 25 different job titles used for word processing supervisors. These are listed in Table 4. The great diversity among these supervisory job titles may stem from the fact that many of these supervisors have organizational titles which predate the establishment of the word processing system.

Special support positions have been created for the word processing environment that parallel many of the positions created to support data processing systems. These special positions were investigated in the 1975 IWP survey (Deutsch, Shea & Evans). The special support positions most frequently mentioned by the respondents to this research were programmers/analysts and proofreaders. The nine positions that were identified are listed in Table 5.

Rohrer (1978) also investigated the new positions that have been created for the word processing industry. The most frequent special support positions reported in her study were supplies clerk and AS personnel. Special support positions identified by Rohrer are listed in Table 6.

Word processing equipment has progressively become more sophisticated and adaptable. Current equipment is software-based and is

Table 3

Job Titles For Operators of WP Eqipment
Used By Respondent Companies

Job Titles	Number of Companies Using Titles
Working Supervisor	4
WP Operator	4
Coordinator to Supervisor	3
Lead Operator	3
Correspondence Secretary	3
WP Specialist	3
Typist	3
Secretary	2
Stenographer	2
WP Technician	2
Word Processor	1
General Duty Clerk	1
Senior Correspondence Secretary	1
Typist - WP	1
Steno-Ediphone Operator	1
Edit Clerk	1
MT/ST Operator	1

Source: Rohrer, S. K. "Current Status of Word Processing in Businesses in a Large Industrial City with Implications for Business Education Curricular Change." Ph.D. dissertation, University of Pittsburgh, 1978, p. 84.

Table 4

Position Titles of Word Processing Supervisors Interviewed

Position Title	Number
Administrative Assistant	2
Administrative Services, Manager	1
Division Manager	1
Lead Operator and Supervisor	1
Manager	4
Manager, Office Services	1
Manager, Publications Department	1
Manager, Technical Publications	1
Manager, Typing Services Division	1
Manager, WP Center	1
Office Manager	1
Office Services Supervisor	1
Office Supervisor	1
Office Systems Analyst	1
Owner	1
Personnel Manager	1
Supervisor, Composition Services	1
Supervisor of Typing	1
Supervisor Publications and Public Information	1
Supervior WP	5
Supervisor WP Center	1
Supervisory Clerk-Typist	1
Supervisory Management Analyst	1
WP Operations	1
WP Supervisor	1

Source: Larson, C. J. "A Study of Word Processing to Provide a Rational For Educational Programs." Ed.D. dissertation, University of Northern Colorado, 1980, p. 47.

Table 5

Support Positions Created by Word Processing

Job Title	Number
Programmers/analysts	28
Proofreaders	21
Technical specialists	15
Editors/composers	11
Trainers/Educators	8
Records/tape librarians	4
Communications/graphics specialists	4
Schedulers/controllers	4
Format specialists	3

Source: Deutsch, Shea & Evans. Word Processing and Employment. International Word Processing Association, Willow Grove, Pennsylvania, 1975, p. 14.

Table 6

Job Titles Other Than WP Operator Which Report to WP Manager/Supervisor Used by Respondent Companies

Job Titles	Number
Supplies Clerk	3
AS Personnel	3
Messenger	2
Log Clerk	2
Proofreader	1
Scheduler	1

Source: Rohrer S. K. "Current Status of Word Processing in Businesses in a Large Industrial City with Implications for Business Education Curricular Change." Ph.D. dissertation, University of Pittsburgh, 1978, p. 85.

frequently programmable. The fact that much of this equipment functions as minicomputer equipment and is used to handle word processing and data processing applications suggests that programmers, librarians, analysts, control clerks, and peripheral equipment operators will be needed to support the systems of the very near future.

The Future of Word Processing

The future of word processing is the future of the office because word processing will serve as a link in the chain of technologies that will shape the office of the future.

A team (the number was not specified) of well-known word processing industry experts who participated in the Delta Pi Epsilon research (Scriven, et al., 1980) were asked to give their opinions about the future of word processing. These experts agreed unanimously that there will be greater interaction between word processing and data processing. They were evenly divided about the specific nature of this interaction and expressed two distinct opinions:

1. Word processing and data processing will be indistinguishable and will merge into information processing.
2. The organizational separation between word processing and data processing will continue for some time to come.

Another opinion expressed by the experts was that the development of more sophisticated word processing hardware and software would continue. They further believed that more software packages would be available to facilitate proofreading (spelling, hyphenation, grammar,

and punctuation) and to solve the problem of the incompatibility of equipment from different vendors.

It has been speculated that executives will operate terminals in the office of the future. This group of experts is of the opinion that managers will operate easy-to-use terminals and will require office assistants to help them with more managerial tasks than are currently being performed by secretaries and typists. Further, the experts believed that by 1985, the goals of word processing will shift from efficiency to effectiveness and word processing will make a transition from a document production tool to a management tool.

Lastly, the experts expressed the opinion that the success of the office systems of the future will depend less on the availability of new technology than on the availability of people who are adaptable to change and willing to learn to use the new technology in a productive manner.

The respondents to the Rohrer study (1978) also predicted some future trends:

- The volume of typing tasks processed on word processing equipment will increase.
- The volume of typing tasks processed from dictation media on word processing equipment will increase.
- The volume of typing tasks inputted by optical character recognition will increase.
- The variety of typing tasks processed on word processing equipment will increase.
- The number of word processing work stations in the system will increase.

- Word processing equipment capabilities will increase.
- Word processing equipment interface with computer or telecommunications equipment will increase. (Rohrer, 1978, pp. 104-5)

Larson (1980) completed a study of 35 word processing supervisors in the San Francisco Bay area. The supervisors were asked to project the changes they expected to see in the word processing industry in the next 3-5 years. The changes most often projected were:

1. The merger of data processing and word processing.
2. Decentralization of word processing within the organization.
3. The use of optical character recognition.
4. The establishment of an information department including word processing, data processing, and reprographics.
5. The use of interoffice and intraoffice telecommunications. (Larson, 1980, p. 67)

Other Research in Word Processing

A total of 22 dissertations have been completed on word processing. These studies fall into the following categories:

1. Entry-level job requirements for employment in word processing
2. Job satisfaction of word processing personnel
3. Word processing in business organizations
4. Word processing in the business education curriculum
5. Word processing task analyses

This study of word processing falls in the third category. Of the seven studies that have been completed in this category, three (Lewis, 1977; Rohrer, 1978; and Larson, 1980) addressed research

questions that paralleled this investigation. The other four studies investigated word processing in business with a different purpose than that of the current investigation.

Ott (1979) completed a study to determine entry-level skills necessary for employment in word processing, whether word processing equipment was used in businesses in Eastern Washington, the types of word processing equipment (by manufacturer) being used by businesses, and the employment opportunities for disadvantaged students in entry-level word processing positions.

Entry-level skills were identified for word processing operators and administrative secretaries. The majority of the respondents recommended that word processing be taught in public schools. One-fourth of the 224 firms contacted by mail used word processing equipment. The majority of the respondents indicated that there was a future for disadvantaged students in word processing.

The purpose of Spring's survey (1977) of 19 organizations with word processing centers in the urban corridor of Virginia was to identify the factors in the word processing conversion process, the typing and nontyping tasks performed, and the employment tests administered in the word processing centers.

Spring found that most of the organizations converted to word processing in order to improve the quality and quantity of correspondence in their office. In most organizations the decision to convert was made by upper management. The major problem encountered in the conversion to word processing was reluctance on the part of personnel

to accept the word processing concept. Tasks performed by correspondence and administrative secretaries were identified. Most organizations administered a five-minute straight-copy test and required 50 words per minute as the minimum typing speed.

O'Sullivan (1977) used a modified Delphi technique to secure and refine the forecasts of businesspersons and educators concerning the importance of word processing in the office of 1984. Three panels of experts (20 administrators, 20 middle managers, and 20 office education teachers) were mailed a questionnaire on which they related the likelihood of an event to occur on a scale of 1 to 4 (very unlikely to very likely).

The groups generally concurred on the impact of word processing technology; however, the degree of likelihood was different in some cases. Educators expressed uncertainty that small offices will be using automatic typewriters by 1984. Businesspersons rated this a very likely possibility. Educators did not agree with business groups that secretarial functions will be divided into correspondence and administrative support.

Claffey (1980) studied 15 firms in New England to determine the organization and operation of the word processing centers, the job-related characteristics of word processing employees of the firms, and the perceptions of the users of the word processing center within the organization.

Claffey found that considerable variety existed in the organization, purpose, and operation of the word processing centers that were surveyed. English and typewriting skills were considered important characteristics for word processing personnel. The ability to get along with people was the most desirable trait for word processing center supervisors, operators, and administrative assistants. The majority of individuals interviewed believed that, overall, there were no adverse affects resulting from the present method of word processing organization.

Summary

This investigation centered around businesses with word processing systems in a major metropolitan area in Virginia. This chapter contained a review of previous educational and business research that related to this study.

The organization of word processing systems can be centralized or decentralized. In her 1978 study of twelve "Fortune 500" companies in Pittsburgh, Rohrer found that a compromise between the centralized and the decentralized word processing system of organization was being used by the respondent organizations. In the 1979 Word Processing Systems study (Deutsch, Shea & Evans) and in the 1979 Delta Pi Epsilon study (Scriven, et al., 1980), 64 percent of the respondents reported the use of the centralized mode of organization.

The trade literature on word processing emphasizes the increasing popularity of the CRT display standalone and the diminishing

popularity of the blind standalone. Forty-five percent of the organizations responding to the Word Processing Systems study reported the use of CRT standalones; 25 percent reported using blind standalones. Nine percent of this population had installed shared-logic systems, and 21 percent reported the use of photocomposition.

Eighty-six percent of the respondents to the Delta Pi Epsilon study (Scriven et al., 1980) indicated that their word processing system was used to produce correspondence; forms fill-in was also mentioned as an application. In the Rohrer study (1978), memos, letters, repetitive documents, and statistical text were the most frequent applications for the word processing center.

Lewis (1979) studied the effect of dictation training on correspondence origination. He found that principals who were trained to dictate were more likely to originate their correspondence by machine dictation. Rohrer found that the mode of origination depended on the length and difficulty of the document. The respondents to the Word Processing Systems study (Walshe, 1980) indicated that longhand input accounted for 52 percent of the total workload, while dictated input accounted for only 25 percent.

Although many organizations have created special positions for word processing personnel, there is at present no uniformity among the job titles used for these positions. The 1979 IWP study (Deutsch, Shea & Evans) revealed 13 job titles for word processing operators; the Rohrer study (1978) revealed 17. The literature also indicated

that special support positions, such as proofreader, analyst, and trainer, have been created for this industry.

A team of well-known word processing industry experts participating in the Delta Pi Epsilon research (Scriven et al., 1980) agreed that there will be greater interaction between word and data processing in the future. Respondents to the Larson study (1980) also predicted such an interaction. The use of optical character recognition and telecommunications was also predicted in the latter two studies.

A total of 22 dissertations have been completed on word processing. Studies which relate to this research have been reviewed in this chapter.

No current research is available on the implementation of word processing in Virginia. This study was undertaken to add to the knowledge base available about word processing and to examine how the previously discussed aspects of word processing are being implemented in the Richmond metropolitan area.

Chapter IV

PROCEDURES

This chapter is concerned with (1) selection of the survey site, (2) selection of the survey population, (3) development of the survey instrument, (4) validation of the survey instrument, (5) interview procedures for data collection, and (6) data analysis procedures.

Selection of the Survey Site

Frame (1976) suggests that a word processing survey population should consist of organizations such as law offices, banks, medical clinics, manufacturers, and governmental offices where the volume of paperwork calls for some form of office work specialization and systemization.

The Richmond, Virginia, metropolitan area was selected as the survey site because of the high concentration of organizations that are likely to benefit from the implementation of word processing. Richmond is the capital city of the Commonwealth of Virginia. It is the site of not only state government offices but also of a host of other public agencies, corporations, and private businesses.

According to the Virginia Employment Commission (1978, pp. 115-116), the largest industry groups represented in the Richmond metropolitan area are services, trades, and manufacturing. Service industries account for 28 percent of total employment. Trade is the second largest industry group, accounting for 23 percent of total employment. Manufacturing accounts for 18 percent of employment. Other important industries include finance, public administration, transportation, communication and utilities, and construction. A summary of 1985 employment projections by industry for the Richmond metropolitan area is contained in Table 7.

White-collar employment accounts for over half of total industry employment in the Richmond metropolitan area and is predicted by 1985 to increase by 18 percent. Clerical occupations account for 22 percent of white-collar employment in Richmond and will provide the largest number of job openings through 1985.

Selection of the Survey Population

Two other researchers (Spring, 1977; Rohrer, 1978) have attempted to identify a population of organizations using word processing through the use of a standard industrial directory. In both instances, such an approach resulted in the identification of a limited population. For example, Rohrer used the Fortune 500 Directory and identified only twelve organizations in Pittsburgh utilizing a supervised word processing system. Similarly, Spring consulted Dunn and Bradstreet's Industrial Directory and identified twelve organizations

Table 7

Major Industry Employment Distribution
Projections for 1985
Richmond Metropolitan Area

Industry	Number
Agriculture, Forestry, Fishing	3,000
Mining	500
Construction	26,900
Manufacturing	56,100
Transportation, Communication, Utilities	20,000
Trade	77,500
Finance, Insurance, Real Estate	27,100
Service Industries	95,300
Public Administration	24,100

Source: Virginia Employment Projections to 1985, Virginia Employment Commission, 1978, p. 119.

utilizing word processing in the urban corridor of Virginia for her study; she also consulted the telephone directory to identify additional hospitals and educational institutions. The result was a total survey population of nineteen organizations.

Murranka (1979) conducted a task analysis of word processing occupations. The survey population for this study consisted of word processing personnel employed by forty-nine organizations in Phoenix, Arizona. Murranka identified her survey population by consulting the membership directory of the Arizona Word Processing Association because this was the most comprehensive list available of organizations using word processing in the Phoenix area. Lewis (1977) used the mailing list of an unspecified word processing magazine to identify a population of word processing managers and supervisors.

For this study of word processing systems in a major metropolitan area in Virginia, the researcher identified word processing managers and supervisors who are knowledgeable of the current operation of the word processing systems within their organizations and of the future plans for modification or expansion of these systems. Members of the Word Processing Association of Richmond were chosen as the survey population. This group of word processing professionals was organized in 1973 and, according to the 1979-80 president, Michael E. Rider, represents 90-95 percent of the supervised word processing installations in the Richmond area. The Word Processing Association of Richmond defines a supervised word processing installation as one having someone responsible for its management and staffing. The

population is therefore representative of organizations utilizing word processing in the area. Membership of the association as of April 1981 included approximately 50 supervised word processing systems in law offices, insurance companies, banks, medical orgainizations, manufacturing organizations, non-profit organizations, utility companies, and governmental agencies.

Development of the Survey Instrument

This study of word processing was concerned with systems organization and implementation, employment patterns, and plans for future systems expansions and application of emerging technologies. In order to understand how word processing systems are organized in the Richmond metropolitan area, data were gathered on systems configurations and on the assignment of correspondence work to the word processing system. While employment patterns in the word processing field are becoming standardized, there is still considerable variation from one area to another. Therefore, data about job classifications and number of workers employed were collected and analyzed. Further, the backbone of a word processing system is the equipment or the technology that drives it. Accordingly, data were gathered on the types of equipment currently being used and on plans for expansion and application of emerging technologies.

The questions contained in the survey instrument were adapted from an instrument developed by Rohrer (1978) for a study of the current status of word processing in businesses in the Pittsburgh

area. Since the questions contained in sections of the Rohrer instrument were closely related to the research questions of this study, they were adapted to formulate the instrument for this study. The following adaptations were made to the Rohrer instrument.

Questions regarding the work experience and background of the respondents were expanded to include data about the type of organization represented and the management of the system. Questions regarding the supervisors' training on word processing equipment were omitted because they were not included in the research questions of this investigation.

Questions concerning the physical organization of the word processing system and the types of equipment used were expanded into two sections for the sake of clarity and simplicity.

Questions that dealt with five-year projections for the use and application of word processing equipment were expanded into two sections dealing with projections for the growth of the word processing system and with projections for the application of emerging technologies.

Questions concerning the concept of division of work were condensed into the section headed "Assignment of Correspondence Tasks to the Word Processing System." Questions about current and emerging job classifications for word processing were divided into two sections. Questions about types of documents processed in the word processing system and the sources of input for these documents were expanded into two sections.

Questions regarding skills, knowledges, and abilities needed for word processing were omitted because they were not included in the research questions of this investigation.

Questions concerning preferred sources of recruitment and selection of word processing operators were omitted because they were not included in the research questions of this investigation.

The questions contained on the cover page of the instrument were designed to gather data about the types of organizations represented, the backgrounds of the word processing managers, and the management of the word processing systems. The instrument (Appendix A) contained the following:

Section I - the organizational structure of the word processing system

Section II - the assignment of correspondence tasks to the word processing system

Section III - the types of equipment utilized in the word processing system

Section IV - the types of documents processed in the word processing system

Section V - the mode of input for documents processed in the word processing system

Section VI - job classifications created for the word processing system

Section VII - other job classifications created for the word processing system

Section VIII - five-year projections for the growth and expansion of the word processing system

Section IX - five-year projections for the application of emerging technologies

Validation of the Survey Instrument

Borg and Gall (1971, p. 202) suggest that in addition to the preliminary check of survey items that is made to locate ambiguities, it is desirable to conduct a validation of the instrument. A panel of qualified experts should be selected to review the instrument and to indicate whether certain questions are ambiguous or whether provisions should be made for certain responses that are not included in the instrument. West (1977, p. 10) concurs: validation of data collection instruments is mandatory.

In order to ensure the clarity and validity of the survey instrument, a panel of four word processing managers and four business educators (Appendix B) was selected to review the instrument. The survey instrument was mailed to the eight panel members, who had agreed in advance to participate in the validation study. After the participants had sufficient time to respond to the instrument (about one month), the researcher interviewed each participant personally to review responses and reactions to the instrument. The purpose of this interview was to assess the clarity and appropriateness of the questions and to elicit suggestions for modifications. The survey instrument was then revised and pretested on two word processing supervisors

in the Tidewater area of Virginia. It was then revised to its final form.

Interview Procedures for Data Collection

Borg and Gall (1971) emphasize the importance of transmittal techniques in determining the percentage of responses obtained in survey research. On May 12, 1981, the survey instrument, along with a letter of transmittal (Appendix C), was mailed to 63 word processing managers/supervisors identified through the April 1981 membership roster of the Word Processing Association of Richmond. The transmittal letter explained the purpose and significance of the study, the importance of the respondent's participation, and the procedures for collecting the data. Beginning on May 18, 1981, the researcher placed telephone calls to participants to set up appointments to complete the survey instrument.

After allowing for multiple memberships from the same organization, the researcher determined that 50 word processing systems were represented in the survey population. Between May 19 and June 12, 44 personal interviews were conducted, three telephone interviews were conducted, and three survey instruments were returned by mail. The mailed returns were followed up by telephone interview. The response rate was therefore 100 percent. The researcher thanked each participant at the close of the interview and also placed a thank-you note in the July-August issue of the Word Processing Association of Richmond bimonthly newsletter.

Data Analysis Procedures

The purpose of this study was to investigate the implementation of word processing in a major metropolitan area in Virginia. Descriptive statistics were employed to analyze the data collected from the population of word processing managers and supervisors in the Richmond metropolitan area. Means, modes, percentages, ranges, and frequency distributions were calculated as appropriate.

The first major research question addressed by this investigation was: How is the word processing concept being implemented in businesses with word processing systems in the Richmond metropolitan area? To answer this question, the following specific questions were investigated and data collected for them were analyzed as noted.

a. What is the size of word processing installations in the Richmond metropolitan area? (The responses to the preliminary question "What is the size of the word processing staff including yourself?" were used. The mean, median, and range were reported.)

b. What percentage of organizations operate the word processing system for multiple shifts? (The responses to the preliminary question "For how many shifts is the word processing system in operation?" were used to calculate percentages.)

c. What form of office layout is used in the word processing system? (The responses to the preliminary question "What form of office layout is used in the word processing system?" were summed and percentages were calculated.)

d. What forms of word processing system organization are being utilized? (The number of affirmative responses to each organization option in Section I was totaled and percentages calculated to determine what percentages of the respondents were using the various forms of organization.)

e. What number of secretaries is employed in word processing systems in the Richmond metropolitan area? (To determine the average number of secretaries employed in word processing systems, the responses placed in the column "No. of Secretaries Employed" were totaled and averaged.)

f. What is the number of principals served in word processing systems in the Richmond metropolitan area? (To determine the number of principals served by word processing systems, the responses placed in the column "No. of Principals Served" were totaled and averaged.)

g. To what extent are correspondence tasks assigned to the word processing system? (The affirmative responses to each option in Section II were totaled and used to calculate percentages.)

h. What type of equipment is being utilized in word processing systems? (The affirmative responses to types of equipment listed in Section III were totaled and percentages were calculated.)

i. What types of word processing equipment are used most frequently in word processing in the Richmond metropolitan area? (To determine the equipment used most frequently in word processing systems, the responses to the "How Many" column for each type of equipment listed in Section II were totaled and averaged.)

j. What percentage of the word processing systems in the Richmond metropolitan area are using communicating word processing equipment? (To determine the percentage of word processing systems using communicating word processing equipment, the affirmative responses to the "Communicating Feature" column for each type of equipment listed in Section III were totaled and percentages calculated.)

k. What percentage of specific types of documents are being processed in word processing systems? (The responses to each option in Section IV were converted to percentages, and the percentages were averaged.)

l. What is the frequency of input mode for documents processed in the word processing system? (To determine the most frequent input mode for each type of document, the responses to the options for each type of document in Section V were summed and averaged.)

The second major research question addressed by this investigation was: What current employment patterns exist in businesses with word processing systems in the Richmond metropolitan area? To answer this question, the following specific questions were investigated and data collected for them were analyzed:

a. From what positions were word processing managers and supervisors promoted into their positions? (Responses to the preliminary questions "What was your former job title?" and "For how many years did you hold this title?" were used to develop a table listing current and former positions and tenure in each position.)

b. What style of management organization is being used in word processing systems? (The responses to the options in the preliminary question "Please check the statements below which apply to the management of your organization" were totaled and percentages were computed.)

d. In what numbers are workers being employed in these job classifications? (To answer this question, the number of workers employed in each classification in Section VI, for all respondents, was averaged.)

e. What other job classifications have been created for the word processing industry? (To answer this question, the affirmative responses to the classifications listed in Section VII were totaled and percentages were computed.)

f. In what numbers are workers being employed in these job classifications? (To answer this question, the number of workers employed in each classification in Section VII, for all respondents, was averaged.)

The third major research question addressed by this investigation was: What plans do businesses with word processing systems in the Richmond metropolitan area have for word processing systems expansion and for application of emerging technologies in the next five

years? To answer this question, the following specific questions were investigated and data collected for them were analyzed:

a. What plans do organizations in the Richmond metropolitan area have for the growth and expansion of word processing in the next five years? (For each projection in Section VIII, the percentage responding to each choice was calculated.)

b. What plans do organizations in the Richmond metropolitan area have for application of emerging technologies in word processing in the next five years? (For each application in Section IX, the percentage responding to each choice was calculated.)

Summary

For this study of word processing in a major metropolitan area in Virginia, the researcher administered a survey instrument to 50 word processing managers/ supervisors in the Richmond metropolitan area.

The survey instrument was adapted from an instrument developed by Rohrer (1978) for a study of the status of word processing in businesses in Pittsburgh, Pennsylvania. The instrument was validated by a panel of four word processing managers and four business educators and was revised based on their suggestions. The instrument was then pretested before the data were collected.

Descriptive statistics were used to analyze the data collected from the population of word processing managers. The results of the analysis are presented in Chapter V.

Chapter V

FINDINGS

This chapter includes an analysis of the data collected from 50 word processing managers and supervisors in the Richmond metropolitan area. The chapter contains the following sections:

- Profile of the Respondents
- Implementation of Word Processing
- Employment Patterns in Word Processing
- Future Plans for Word Processing Systems

Profile of the Respondents

A description of the types of organizations represented in the study and of the educational background of the respondents is provided below. This information gives the reader a perspective of the survey population.

Types of Organizations Represented

This study of word processing systems in the Richmond metropolitan area involved 50 word processing managers and supervisors representing diverse areas of business activity. The largest organizational group represented was government (24 percent). A breakdown of the types of organizations represented is contained in Table 8. The names of the participating organizations are listed in Appendix D.

Table 8

Types of Organizations Represented in The Study

Type of Organization	Representation	
	Number	Percentage
Government	12	24
Banking/Finance	10	20
Manufacturing	7	14
Insurance	4	8
Legal	4	8
Utilities	4	8
Medical	2	4
Non-profit	2	4
Retailing	1	2
Other	4	8
Total	50	100

Educational Background of Respondents

All of the respondents had completed high school, and a large percentage of them (42 percent) had taken some college courses. Nearly a quarter of them (22 percent) had completed business college. Twelve percent hold four-year degrees, while an equal number of respondents (6 percent each) hold master's and two-year degrees. One individual had earned a Ph.D. degree shortly before becoming a word processing supervisor. These data are reported in Table 9.

Word Processing Training Background of Respondents

The most frequent source of word processing training reported by the respondents (64 percent) was vendor hands-on equipment training followed by professional word processing seminars (40 percent). Vendor-sponsored supervisory/management training and on-the-job training were each reported by an equal number of respondents (36 percent). These data are reported in Table 10.

The Implementation of Word Processing

The first major research question addressed by this study was: How is the word processing concept being implemented in businesses with word processing systems in the Richmond metropolitan area? In answer to this question, the following data are presented:

- Size of Word Processing Installations
- Number of Shifts Word Processing Systems Are Operational
- Forms of Office Layout
- Organizational Structure of Word Processing Systems
- Assignment of Correspondence Tasks

Table 9

Educational Background of Respondents

Level of Education	Respondents	
	Number	Percentage
High School Only	5	10
Business College	11	22
Some College	21	42
Two-Year Degree	3	6
Four-Year Degree	6	12
Master's Degree	3	6
Ph.D. Degree	1	2
Total	50	100

Table 10

Word Processing Training Background of Respondents

Type of Training	Respondents	
	Number	Percentage*
Vendor Hands-on Training	32	64
Professional Seminars	20	40
On-the-Job Training	18	36
Vendor Supervisory/Management Training	18	36
In-House Supervisory Seminars	10	20
College Courses	4	8
Other (Four-year Degree)	1	2

*Totals exceed 100% due to multiple responses.

- Equipment Utilization
- Types of Documents Processed in the Word Processing Systems
- Modes of Input for Documents Processed in Word Processing

Size of Word Processing Installations

The size of word processing installations in the Richmond metropolitan area ranged from 2 to 29. The mean word processing staff size was 9. The median staff size was 13, while 27 of the respondents reported having a staff size of between 4 and 9. Data regarding the size of word processing installations are reported in Table 11.

Number of Shifts Word Processing Systems Are Operational

In order to increase the cost effectiveness and productivity of word processing equipment, organizations are beginning to operate their word processing systems for multiple shifts. Only 20 percent of of the organizations surveyed in this study reported the use of multiple shifts; half of this number (10 percent) are in operation for two 8-hour shifts. These data are reported in Table 12.

Forms of Office Layout

The open (modular) form of office layout, which is considered the most functional for a word processing system, was reported by 58 percent of the respondents. Many of the respondents who are currently using a traditional layout have indicated that they are in the process of converting or plan to convert to a modular layout as soon as funds are available. These data reported in Table 13.

Table 11

Size of Word Processing Installations
in the Richmond Metropolitan Area

Size of Staff	Installations	
	Number	Percentage
1 - 3	6	12
4 - 6	16	32
7 - 9	11	22
10 - 12	5	10
13 - 15	4	8
16 - 18	4	8
19 - 29	4	8
Total	50	100

Table 12

Number of Shifts Word Processing Systems Are Operational

Number of Shifts	Word Processing Systems	
	Number	Percentage
1	40	80
1½	3	6
2	5	10
3	2	4
Total	50	100

Table 13

Forms of Office Layout Used in Word Processing Systems in the Richmond Metropolitan Area

Form of Layout	Number	Percentage
Open (Modular)	29	58
Traditional	21	42
Total	50	100

Organizational Structure of Word Processing Systems

The forms of organization reported by the respondents are listed in Table 14. The organizational form most frequently reported (96 percent) was the centralized mode. A mean number of eight operators were employed in this form of organization to serve a mean number of 171 principals. In one instance a county government with offices geographically dispersed reported a totally decentralized word processing organization with a centrally located word processing coordinator who serves as a word processing analyst, trainer, and consultant.

Another organization with a totally automated office system reported a fully decentralized word processing and administrative support system that is coordinated by an office automation analyst. In this system, eight office assistants provide word processing and administrative support for 32 principals.

Fourteen percent of the respondents reported having a centralized administrative support system, while eight percent of the respondents reported having decentralized administrative support.

Assignment of Correspondence Tasks

The assignment of correspondence tasks in the participating word processing systems is presented in Table 15. A majority of the respondents (58 percent) report that their word processing systems are responsible for all typing tasks. A somewhat smaller percentage (40 percent) are responsible only for special typing applications. Twenty

Table 14

Form of Organization,
Average Number of Secretaries Employed, and
Average Number of Principals Served

Form of Organization	Organizations Reporting		Number of Secretaries Employed	Number of Principals Served
	Number	Percentage		
Centralized WP	48	96	8	171
Decentralized WP	4	8	4	18
Centralized AS	7	14	6	84
Decentralized AS	4	8	10	143
Centralized WP/AS	-	-	-	-
Decentralized WP/AS	1	2	7	30
Work Clusters	2	4	9	3

Note: (WP=Word Processing, AS=Administrative Support)

Table 15

Assignment of Correspondence Tasks
to the Word Processing System

Assignment	Organizations	
	Number	Percentage*
All Typing Tasks	29	58
Special Applications	20	40
Special Application and Overflow	16	32
Secretaries Use WP Equipment	10	20
Other	1	2

*Totals exceed 100% due to multiple responses.

percent of the respondents indicated that secretaries outside the word processing system are using unsupervised automated equipment.

Equipment Utilization

As found in the literature, the CRT display standalone was also the most popular type of equipment in use by this population. Seventy percent of the respondents reported using an average number of five pieces of this type of equipment, while 52 percent reported the use of an average number of four blind standalones. Nearly a quarter of the respondents (24 percent) are using shared-logic systems, and 12 percent are using photocomposition equipment. One installation is on line to a main frame computer. These percentages exceed 100 percent due to multiple responses. This information is reported in Table 16. The data also indicate the percentage of equipment that is equipped with communicating capabilities. The CRT display was equipped for telecommunication in 38 percent of the cases.

Types of Documents Processed in the Word Processing System

The document classification most frequently mentioned by the respondents was memos/letters. The data presented in Table 17 indicate that for 88 percent of the respondents this application accounts for 33 percent of their total workload. The primary document application for which word processing equipment was developed was repetitive letters/paragraphs. For 76 percent of the respondents this application accounts for 18 percent of their total workload. Statistical and textual reports are being processed by 66 and 56 percent of the

Table 16

Types of Equipment Used in Word Processing Systems in the Richmond Metropolitan Area

Type	Percentage of Systems Using	Average Number of Pieces	Percentage Equipped for Communication
CRT Display	70	5	38
Blind Standalone	52	4	12
Shared-Logic System	24	6	12
One-Line Display	14	2	2
Photocomposition	12	2	2
On-Line Computer	2	12	100

Table 17

Types of Documents Processed in Word Processing Systems

Document Classification	Respondents Reporting* Number	Percentage	Mean Percentage of Workload
Memos/Letters (One-time)	44	88	33
Repetitive Letters/Paragraphs	38	76	18
Statistical Reports/Financial Statements	33	66	18
Textual Reports	28	56	16
Confidential Letters	25	50	9
Address Lists	19	38	12
Forms Completion	19	38	9
Forms Design	17	34	3
Legal Documents	16	32	32
Brochures/Newsletters	13	26	3
Records Processing	13	26	7
Mathematical Text	9	18	11
Medical Documents	5	10	40
Technical Reports	3	6	9
Manuscripts	4	8	7
Other			
Manuals	9	18	17
Envelopes	1	2	30

*Three respondents were unable to quantify their work.

respondents, respectively. Address lists, forms design, and forms completion were mentioned by more than one third of the respondents.

It is interesting to note that for 10 percent of the respondents medical documents comprise 40 percent of their total workload. The fact that these respondents specialize in the medical field (a hospital, a clinic, a pharmaeutical manufacturer, and two health department offices) accounts for this phenomenon.

On the other hand, the 16 respondents processing legal documents report that this application accounted for only 32 percent of their workload. In this instance, banks, insurance companies, and state agencies are processing a smaller volume of legal documents than law firms.

Modes of Input for Documents Processed in Word Processing

The modes of input for documents processed in the word processing systems are presented in Table 18. The numbers listed under each mode of input represent the mean rating reported by the respondents (3 equals high, 2 equals medium, 1 equals low). Thus, the higher the rating, the higher the frequency of the mode of input.

On this basis, it would appear that OCR is the most frequent source of input for many of the document classifications. Note that the ratings for OCR are generally higher than those headed "longhand; "typed draft," "dictated," and "pre-stored." When OCR is adopted as an input mode, no other forms of input are accepted in word processing. Therefore, the small number of respondents who use OCR as an input source use it almost exlusively. They were generally law firms.

Table 18

Modes of Input for Documents, Mean Rating for Each, and Number Reporting Use of Each Mode

Document Classification	Modes of Input									
	Long-hand	N/R	Typed Draft	N/R	Dicta-ted	N/R	OCR	N/R	Pre-Stored	N/R
Memos/Letters	2.6	35	1.5	11	2.3	31	3.0	3	1.9	8
Repetitive Letters/ Paragraphs	1.8	20	1.4	8	1.4	10	2.6	6	2.8	29
Statistical Reports	2.6	31	1.6	14	1.5	4	3.0	1	2.2	6
Textual Reports	2.5	25	2.1	11	1.9	8	3.0	1	2.0	3
Confidential Letters	2.3	19	1.3	4	1.6	15	2.3	3	2.0	3
Address Lists	2.2	15	1.9	15	1.0	3	3.0	1	2.6	14
Form Completion	2.8	16	1.3	3	1.5	4	0.0	0	2.0	1
Forms Design	2.6	22	1.8	5	1.0	4	0.0	0	3.0	3
Legal Documents	3.0	9	2.0	3	2.4	8	2.8	5	2.4	7
Brochures/ Newsletters	2.7	9	2.0	7	1.6	3	3.0	1	0.0	0
Records Processing	2.2	11	2.0	5	1.0	1	3.0	2	2.6	8
Mathematical Text	2.3	7	1.3	3	1.0	2	3.0	2	2.0	2
Medical Documents	3.0	4	1.0	1	2.0	4	2.0	1	3.0	1
Manuscripts										
Technical Reports	2.5	12	2.0	4	1.2	5	1.0	1	1.0	1
Other										
Envelopes	3.0	1	-	-	-	-	-	-	-	-
Manuals	2.0	8	1.5	2	-	-	-	-	-	-

Note: Rating Scale, 3=High, 2=Medium, 1=Low
N/R = Number Reporting, Total N = 50

The most frequent sources of input for memos and letters are longhand and machine dictation. A nearly even number of respondents are processing a high amount of longhand and dictated input--35 respondents reported a mean rating of 2.6 for longhand, whereas 31 respondents reported a mean rating of 2.3 for dictated input. For these one-time documents, there is a moderate amount (mean rating equals 1.9) of pre-stored input, which suggests that these documents are revised.

Pre-stored input is the most frequent mode of origination for repetitive documents (mean rating equals 2.8). New repetitive documents are generally written in longhand.

Thirty-one of the respondents reported that statistical reports are generally written in longhand (mean rating of 2.6); 25 of the respondents reported that textual reports are generally written in longhand (mean rating of 2.5). These documents are also submitted as typed drafts. Rohrer (1978) found that many originators are more comfortable inputting long or technical reports from typed drafts. Twenty-two of the respondents reported that forms design work was generally submitted in longhand (mean rating equals 2.6).

The respondents who process legal input indicated that it is frequently submitted via OCR in a typed draft (mean rating equals 2.8). An even greater amount of longhand input of legal documents (mean rating equals 3.0) was reported by organizations processing legal input without the use of OCR. Because of the standardized nature of many legal documents, a moderately high amount of legal input is pre-stored (mean rating equals 2.4).

Records processing involves the manipulation of data stored in files; therefore, the existing input is usually pre-stored (mean rating equals 2.6) and the new input to the file is generally hand-written (mean rating equals 2.2).

In answer to the first research question, "How is the word processing concept being implemented in businesses with word processing systems in the Richmond metropolitan area?" the following information emerged:

1. The mean word processing staff size was 9, although a range of 2 to 29 was reported.
2. A large majority (80 percent) of word processing systems are in operation for one 8-hour shift.
3. The open (modular) office layout is the most popular form of word processing office landscaping.
4. The single, centralized word processing system is the most popular organizational structure.
5. An average of eight word processing secretaries are employed in the word processing systems.
6. An average of 171 principals are being served by the word processing systems.
7. A majority of the word processing systems are responsible for all typing tasks; a smaller percentage are responsible for special typing applications only.
8. The CRT standalone is the most popular type of equipment in use by the respondents.
9. Word processing equipment is being equipped for telecommunications; 38 percent of CRT standalones and 12 percent of blind standalones are equipped with communications capability.
10. The document application that was most frequently processed by the respondents (88 percent) was memos/letters.

11. Longhand and machine dictation are the most frequent sources of input for memos/correspondence. Longhand is the most frequent source of input for technical, statistical, and textual reports. OCR is used almost exclusively by those organizations equipped with this input capability.

Employment Patterns in Word Processing

The second major research question addressed by this study was: What employment patterns exist in businesses with word processing systems in the Richmond metropolitan area? In answer to this question, the following data are presented:

- Respondents' Current and Former Job Titles and Tenure in Each Position
- Respondents' Years of Supervisory and Operational Experience
- Style of Management Organization
- Word Processing Job Classifications, Average Employment, and Five-Year Employment Projections
- Special Word Processing Job Classifications, Average Employment, and Five-Year Employment Projections

Current and Former Job Titles and Tenure in Each Position

The 50 word processing managers who participated in the study reported 20 different job titles for word processing personnel. Ninety percent of these job titles are directly related to word processing. The titles appear in Table 19.

The most frequent job title (reported by 17 individuals or 34 percent of the population) was "Word Processing Supervisor." The second most frequent job title (reported by 6 individuals or 12 percent of the population) was "Word Processing Manager." Three of the

Table 19

Respondents' Current and Former Job Titles and Tenure in Each Position

Current Job Title	Tenure		Former Job Title	Tenure	
	Years	Months		Years	Months
WP Supervisor	-	1	Correspondence Secretary	-	3
WP Supervisor	-	1	WP/Lead Operator	-	2
WP Supervisor	-	6	Administrative Secretary	2	6
WP Supervisor	-	6	Staff Supervisor	2	-
WP Supervisor	1	-	WP Supervisor	2	-
WP Supervisor	1	-	Executive Secretary	1	-
WP Supervisor	1	-	Graphics/Composition/Art	2	-
WP Supervisor	1	-	Working Supervisor	1	-
WP Supervisor	2	-	Evaluation Specialist	2	-
WP Supervisor	3	-	Production Typist	2	-
WP Supervisor	3	-	Administrative Assistant	6	-
WP Supervisor	3	-	Department Head Secretary	9	-
WP Supervisor	3	-	Correspondence Secretary	4	-
WP Supervisor	3	6	WP Operator	1	6
WP Supervisor	4	-	Sr. Admin. Secretary	10	-
WP Supervisor	6	-	WP Operator	5	-
WP Supervisor	6	-	Operator	4	-
WP Supervisor	12	-	Supervisor, Typing	12	-
WP Manager	1	-	Staff Assistant	1	-
WP Manager	3	-	Secretary	2	-
WP Manager	2	-	Manager Records Control	11	-

Table 19 (continued)

Respondents' Current and Former Job Titles
and Tenure in Each Position

Current Job Title	Tenure Years	Tenure Months	Former Job Title	Tenure Years	Tenure Months
WP Manager	1	6	Assistant Manager	1	-
WP Manager	7	6	Secretary	2	-
WP Manager	9	-	Lead Operator	3	-
Manager, Information Processing	-	2	Manager of WP Center	2	-
Manager, Information Processing	1	-	WP Manager	2	6
Manager, Information Processing	3	6	Manager of Administrative Services	5	-
Supervisor	6	1	Administrative Assistant	1	6
Supervisor	1	6	Administrative Secretary	-	3
Supervisor	2	-	Medical Secretary	22	-
WP Center Supervisor	2	-	WP Operator	5	-
WP Center Supervisor	4	-	Operator WPC Equipment	6	-
WP Coordinator	8	-	Correspondence Secretary	1	6
WP Coordinator	2	-	Secretary	8	-
WP Operations Supervisor	1	-	Correspondence Organization Supervisor	1	-
WP Operations Supervisor	1	-	WP Equipment Operator	2	-
Administrative Assistant	5	-	Administrative Assistant	5	-
Data Processing Supervisor	6	-	WP Supervisor	6	-

Table 19 (continued)

Respondents' Current and Former Job Titles
and Tenure in Each Position

Current Job Title	Tenure		Former Job Title	Tenure	
	Years	Months		Years	Months
Director of WP and Communications	1	6	WP Supervisor	3	6
Manager of Administrative Systems	1	-	Manager of WP	4	-
Manager of Secretarial Services	4	-	Supervisor of Secretarial Services	3	-
Office Automation Analyst	1	-	Systems Analyst	1	-
Owner	4	-	Personnel Director Property Manager	13	-
Section Chief, Secretarial Support	4	-	Administrative Secretary	4	-
Senior WP Operator	-	6	WP Operator	-	6
Operations WP Section	1	-	Clerk D - WP Section	5	-
Supervisor of Stenographic Services	7	-	Supervisor of Stenographic Services	7	-
Supervisor WP/Administrative Support	-	2	Supervisor WP	2	6
WP Senior Clerk	2	-	WP Correspondence Secretary	-	2
Supervisory Manager of Operations	3	-	Office Manager	3	-

respondents held the title "Manager of Information Processing" and one respondent held the job title "Office Automation Analyst" reflecting the transition of word processing to the hub of the integrated office.

The fact that 36 individuals or 72 percent of the respondents have been in their current position for one year or less is indicative of the career paths in word processing that lead to management. Forty-three individuals or 86 percent of the respondents were promoted into their current position from another word processing or secretarial position. Thirty percent were formerly word processing operators, 18 percent were formerly word processing supervisors, 18 percent were formerly secretaries, 14 percent were involved in adminstrative office management, and 6 percent were involved in word processing management, and 6 percent held positions as administrative assistants. Table 19 lists the current and former job titles of the respondents and tenure in each position.

Years of Supervisory and Operational Experience

Thirty-five or 70 percent of the respondents have had prior experience as word processing operators. Twenty-nine or 58 percent of the respondents have had three years or more of supervisory experience. Table 20 lists the years of supervisory and operational experience of the respondents.

Style of Management Organization Reported by Respondents

Three-fifths of the respondents reported that their word processing system was managed by both a manager and a supervisor. Fifty

Table 20

Years of Supervisory and Operational Experience

Job Title	Supervisory Experience		Operational Experience	
	Years	Months	Years	Months
Administrative Assistant	5	-	0	-
Data Processing Supervisor	12	-	5	-
Director of WP and Communications	4	-	3	-
Manager of Administrative Systems	5	-	0	-
Manager of Information Processing	3	-	-	6
Manager of Information Processing	5	-	5	-
Manager of Information Processing	3	-	0	-
Manager of Secretarial Services	7	-	2	-
Office Automation Analyst	0	-	4	-
Owner	10	-	10	-
Section Chief, Secretarial Support	4	-	0	-
Senior WP Operator	-	6	1	-
Supervisor	-	1	2	-
Supervisor	1	6	4	6
Supervisor	2	-	4	-
Supervisor of Operations Word Processing System	6	-	6	-
Supervisor of Stenographic Services	7	-	0	-
Supervisor WP/Administrative Support	2	6	3	-
WP Center Supervisor	2	-	5	-
WP Center Supervisor	4	-	15	-
WP Coordinator	4	-	2	-
WP Coordinator	2	-	0	-

Table 20 (continued)

Years of Supervisory and Operational Experience

Job Title	Supervisory Experience		Operational Experience	
	Years	Months	Years	Months
WP Manager	1	-	1	-
WP Manager	3	-	3	-
WP Manager	2	6	0	-
WP Manager	2	6	5	6
WP Manager	7	6	0	-
WP Manager	9	-	3	-
WP Operations Supervisor	3	-	1	-
WP Operations Supervisor	1	-	3	-
WP Senior Clerk	2	-	7	-
WP Supervisor	-	1	3	-
WP Supervisor	-	1	6	-
WP Supervisor	6	-	0	-
WP Supervisor	-	6	0	-
WP Supervisor	2	6	-	-
WP Supervisor	3	-	-	6
WP Supervisor	1	-	2	-
WP Supervisor	1	-	0	-
WP Supervisor	2	6	4	-
WP Supervisor	2	-	0	-
WP Supervisor	3	-	6	-
WP Supervisor	3	-	3	-
WP Supervisor	3	-	3	-
WP Supervisor	3	-	7	-
WP Supervisor	3	6	1	6
WP Supervisor	4	-	0	-
WP Supervisor	6	-	9	-
WP Supervisor	6	-	4	-
WP Supervisor	12	-	0	-
WP Supervisory Manager of Operations	3	-	0	-

percent of the respondents indicated that the manager was responsible for other functions such as administrative support, records management, or data processing. Nearly 25 percent of the respondents reported that the word processing supervisor was a working supervisor. These data are reported in Table 21.

Word Processing Job Classifications

The organizations participating in the study reported 25 different job classifications that have been created for their word processing operations. As presented in Table 22, the most frequent supervisory job titles reported were word processing supervisor and word processing manager. The most frequent operational job titles reported were word processing operator and corresponding secretary. Four of the respondents reported supervisory job titles that are organizational rather than word processing job titles: unit head, senior clerk, section leader, and office assistant.

Average Employment and Five-Year Employment Projections

The average employment of word processing personnel is highest for the word processing operational titles. The average employment of all word processing operators (word processing operators, correspondence secretaries, typists, word processing equipment operators, word processing secretaries, word processors, Mag II production typists, and office assistants) is 7 individuals. One respondent employs "corresponding secretaries" to answer inquiries from sponsors. A corresponding secretary uses an online computer system to gather the

Table 21

Style of Management Organization Reported by Respondents

Style of Management	Respondents	
	Number	Percentage*
WP Manager and Supervisor	30	60
WP Manager Only	8	16
WP Manager Oversees Other Functions	25	50
WP Supervisor Only	6	12
WP Coordinator	4	8
Working Supervisor	11	22
Other	1	2

*Totals exceed 100% due to multiple responses.

Table 22

Word Processing Job Classifications, Mean Number Employed, and Five-Year Employment Projections

Job Classification	Respondents Number	Respondents Percent	Mean Number Employed	Five-Year Employment Projections
Supervisory				
WP Supervisor	20	40	1	2
WP Manager	19	38	1	1
WP Lead Operator	13	26	1	1
WP Coordinator	6	12	1	1
Other				
Information Processing Manager	3	6	1	-
Office Automation Analyst	1	2	1	-
Section Leader	1	2	1	-
Senior Clerk	1	2	1	1
Unit Head	1	2	1	1
Operational				
WP Operator	18	36	7	6
Correspondence Secretary	15	30	6	6
WP Specialist	8	16	4	3
WP Trainee	6	12	2	2
Typist	4	8	6	2
Other				
WP Technician	4	8	3	2
WP Equipment Operator	3	6	5	2
WP Secretary	1	2	14	-
Corresponding Secretary	1	2	12	5
Form Letter Secretary	1	2	2	2
Sr. Cor. Secretary	1	2	4	1
Communications Operator	1	2	2	1
Word Processor	1	2	6	6
Senior Word Processor	1	2	1	-
Senior Word Processing Operator	1	2	-	-
Mag II Production Typist	1	2	3	-
Office Assistant	1	2	7	-

data needed for the response; the secretary then uses the word processing capability of the system to generate a reply.

Similarly, the highest average projected five-year employment increase (mean equals 6) is also projected for the operational job titles. These data are also presented in Table 22.

Special Word Processing Job Classifications

As reported in the literature, organizations are beginning to create special word processing support positions. The data in Table 23 report on this phenomenon in the Richmond metropolitan area. Word processing proofreader is the support position that was most often reported (by 20 percent of the respondents). The importance of proofreading to the word processing function is thus emphasized. Other support positions that were mentioned by 10 percent of the respondents were: word processing trainer, word processing analyst, word processing input/output clerk, phototypesetting specialist, administrative secretary, and administrative support supervisor. Some support titles mentioned that are not previously reported in the literature include: OCR clerk, printing technician, and teletype specialist positions.

Average Employment and Five-Year Employment Projections

The average employment in the special positions is generally between 1 to 2 individuals because the positions are created to serve staff support functions. Another service function that has emerged from the development of word processing is the parallel administrative support function. Individuals in administative support provide

Table 23

Special Word Processing Job Classifications, Mean Number Employed, and Five-Year Employment Projections

Job Classification	Respondents		Mean Number Employed	Five-Year Employment Projections
	Number	Percent		
WP Proofreader	10	20	2	1
WP Analyst	5	10	2	2
WP Input/Output Clerk	5	10	1	2
Trainer	5	10	1	1
Administrative Secretary	5	10	6	8
AS Supervisor	5	10	4	1
Phototypesetting Specialist	3	6	2	1
WP Editor	-	-	-	-
WP Messenger	3	6	1	1
Other				
Clerk	1	2	1	-
Control Clerk	1	2	1	-
Log Clerk	1	2	1	-
OCR Clerk	1	2	-	1
OCR Input Specialist	1	2	2	3
Proofreader/Editor	1	2	1	1
Printing Technician	1	2	2	-
Routing Clerk	1	2	-	-
Teletype Specialist	1	2	-	3

nontyping services for the office. The administrative support function, therefore, requires a larger staff size (average 6). The largest projected employment increase for special support positions is in the area of administrative support (8). Five-year employment projections for the other special support positions range from 1 to 3.

In answer to the second research question, "What current employment patterns exist in businesses with word processing systems in the Richmond metropolitan area?" the following information emerged:

1. Eighty percent of the word processing managers and supervisors surveyed have had previous word processing experience. Ninety-eight percent of the respondents have had previous supervisory positions.

2. Seventy percent of the word processing systems are managed by both a word processing manager and a supervisor. Twenty-five percent of the organizations employ a working supervisor (with keyboarding responsibilities).

3. Twenty-five different job classifications were reported for word processing personnel. The most frequent job titles reported were word processing supervisor and word processing operator.

4. Average employment of word processing personnel is greatest (7) for word processing operator positions. Five-year projections for increases in employment are also greatest (6) for the word processing operator positions.

5. Word processing proofreader, word processing trainer, word processing analyst, word processing input/output clerk, and phototypesetting specialist were the special support positions most frequently mentioned by the respondents. Administrative support supervisor and administrative secretary were also mentioned as job classifications that support the parallel administrative support function.

6. On the average, one individual is employed in special word processing support positions. The average employment of administrative support secretaries is six. The respondents reported an average employment of one individual in the position of administrative support supervisor. The employment of administrative support secretaries is projected to increase in the next five

years by six. The employment of administrative support supervisors is not expected to increase significantly within the next five years.

Five-Year Projections for the Growth and Expansion of the Word Processing System and for the Application of Emerging Technologies

The third major research question addressed by this study was: What plans do businesses with word processing systems in a major metropolitan area in Virginia have for systems' expansion and for application of emerging technologies in the next five years? In answer to this question, the following data are presented:

- Five-year Projections for the Growth and Expansion of the Word Processing System
- Five-year Projections for the Application of Emerging Technologies

Five-Year Projections for Word Processing Systems Expansion

The data presented in Table 24 reflect the projected growth and expansion of the word processing systems for the population of this study. Ninety-two percent of the respondents expect their volume of work to increase in the next five years, and 86 percent of them expect the number of principals served by their system to increase. Ninety percent of the respondents expect equipment capabilities to increase, and 84 percent of them expect to acquire additional equipment. Seventy-two percent of the respondents expect the variety of the work they process to increase.

Table 24

Five-Year Projections for the Growth and Expansion of the Word Processing System

Projections	Percentage of Respondents Indicating		
	Will Increase	Will Decrease	Will Not Change
Volume of documents processed on WP equipment	92	-	8
Volume of documents processed from typed draft copy	36	20	44
Volume of documents processed from longhand	24	48	28
Volume of documents processed from dictated input	78	4	18
Variety of tasks assigned to the WP system	72	4	24
Number of principals served by WP system	86	-	14
Number of 8-hour shifts WP system operates	24	-	76
Amount of overtime incurred in the WP system	18	8	74
Number of equipped WP work stations	84	4	12
Present WP equipment capabilities	90	-	10

The use of dictated input is expected to increase according to 78 percent of the respondents, while the use of longhand as an input source is expected to increase by only 24 percent of the respondents. Further 48 percent expect the use of longhand input to decrease. Respondents who will be placing greater emphasis on machine dictation as an input mode expect less longhand input as originators become more comfortable with machine dictation. The use of the typed draft is expected to increase by 36 percent of the respondents. Two reasons were cited for this increase: the use of OCR readers, which require typed drafts, and a general increase in the volume of work. Because of the increased productivity expected from improved equipment and processing procedures, the number of 8-hour shifts of operation and the amount of overtime incurred are not expected to increase.

Current Applications of Emerging Technologies

Table 25 contains data regarding current applications of emerging technologies. Eighty-six percent of the respondents reported the use of display-based equipment: standalones, shared-logic systems and on-line computer terminals. Because most of the current equipment is software-based, 74 percent of the survey population is using software-based equipment. Twenty-four percent reported the use of shared-logic systems, and twelve percent reported the use of photocomposition. The use of OCR readers for input was reported by 14 percent of the survey population.

Table 25

Current Use and Application of Emerging Technologies

Applications	Percentage In Use	Percentage of Respondents Indicating Will Increase	Will Decrease	Will Not Change
Display-Based (CRT) Systems	86	90	-	10
Software-Based WP Systems	74	90	-	10
Shared-Logic Systems	24	50	-	50
Integration of WP Systems	30	74	-	26
OCR Readers for Input	14	26	-	74
Photocomposition	12	36	-	64
Computer Output Microfilm (COM)	6	20	-	80
Micrographic Filing Systems	6	28	-	72
Desk-Top Terminals (Principals)	10	32	-	68
Intercompany Telecommunications	16	64	-	36
Intracompany Telecommunications	12	36	-	64
WP/DP Interface	16	70	-	30
Intelligent Copiers (Laser Printers)	8	48	-	52

Five-Year Projections for the Application of Emerging Technologies

Five-year projections for the application of emerging technologies are presented in Table 25. Ninety percent of the respondents will increase the use of display-based and software-based equipment. Because equipment from different vendors offers different features, 74 percent of the respondents expect to increase the integration of word processing equipment systems from different vendors. The integration of word processing and data processing and the use of telecommunications have been predicted as emerging trends for the office of the future. For this group of respondents, 70 percent plan to increase WP/DP interface and 64 percent plan to increase intercompany telecommunications. Thirty-six percent plan to increase intracompany telecommunications as well.

The use of intelligent copiers, desk-top terminals for principals, micrographic filing systems, OCR, and photocomposition has also been predicted for the office of the future. As Table 25 reveals, all of these applications will be put to increased use by the respondents in the next five years.

Other Projections

The following additional projections were reported by the respondents:

- Decentralized work clusters (1 respondent)
- Decentralized word processing systems (2 respondents)
- Electronic filing cabinet (2 respondents)
- Desk-top high-speed printers for secretaries (1 respondent)

- Electronic mailbox (1 respondent)
- Expansion into a WP service bureau (1 respondent)
- Involvement of principals in information processing (1 respondent)
- Integrated WP network (1 respondent)
- More communication with other systems (1 respondent)
- On-line WP/DP system (2 respondents)
- Use of computer-compatible machine shorthand for input 1 respondent)

In answer to the third research question "What plans do businesses with word processing systems in the Richmond metropolitan area have for word processing systems expansion for application of emerging technologies in the next five years?" the following information emerged:

Five-Year Projections for Word Processing Systems Expansion

1. The volume of documents typed on word processing equipment will increase according to 92 percent of the respondents.
2. The volume of documents typed from typed draft copy will not change according to 44 percent of the respondents.
3. The volume of documents typed from longhand copy will decrease according to 48 percent of the respondents.
4. The volume of documents typed from dictated input will increase according to 78 percent of the respondents.
5. The variety of tasks assigned to the word processing system will increase according to 72 percent of the respondents.
6. The number of prinicpals served by the word processing system will increase according to 86 percent of the respondents.

7. The number of 8-hour shifts the word processing sytem is operational will not change according to 76 percent of the respondents.

8. The amount of overtime incurred in the word processing system will not change according to 74 percent of the respondents.

9. The number of equipped word processing work stations will increase according to 84 percent of the respondents.

10. Present word processing equipment capabilities will increase according to 90 percent of the respondents.

Five-Year Projections for Application of Emerging Technologies

1. The use of display-based systems will increase according to 90 percent of the respondents.

2. The use of software-based systems will increase according to 50 percent of the respondents.

3. The use of shared-logic systems will increase according to 50 percent of the respondents.

4. The integration of word processing equipment systems will increase according to 74 percent of the respondents.

5. The use of OCR for input will not change according to 76 percent of the respondents.

6. The use of photocomposition will not change according to 64 percent of the respondents.

7. The use of computer output microfilm (COM) will not change according to 70 percent of the respondents.

8. The use of micrographic filing systems will not change according to 72 percent of the respondents.

9. The use of desk-top terminals for principals will not change according to 68 percent of the respondents.

10. The use of intercompany telecommunications will not change according to 64 percent of the respondents.

11. The use of intracompany telecommunications will not change according to 64 percent of the respondents.

12. Word processing/data processing interface will increase according to 70 percent of the respondents.

13. The use of intelligent copiers will not change according to 52 percent of the respondents.

Chapter VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to investigate the implementation of word processing in a major metropolitan area in Virginia. Fifty word processing managers and supervisors representing the Word Processing Association of Richmond, with members from the metropolitan area, comprised the study population. The study was divided into three sections: (1) the implementation of word processing, (2) employment patterns in word processing, (3) five-year projections for word processing systems expansion and application of emerging technologies.

A nine-part instrument was used to gather data as follows:

1. Organization of the word processing system
2. Assignment of correspondence tasks to the word processing system
3. Types of equipment utilized in the word processing system
4. Types of documents processed in the word processing system
5. Modes of input for documents processed in the word processing system
6. Job classifications used in the word processing system
7. Special job classifications used in the word processing system
8. Five-year projections for the growth and expansion of the word processing system

9. Five-year projections for the application of emerging technologies in the word processing system.

The instrument was validated by a panel of four business educators and four word processing managers and was pretested on two word processing supervisors. The interview method was used to collect the data during May and June of 1981.

Descriptive statistics were employed to analyze the data collected from the population of word processing managers and supervisors. Means, modes, percentages, ranges, and frequency distributions were calculated as approprate.

Summary of the Findings

The 50 word processing managers and supervisors participating in the study represented a variety of organizations. The largest organizational groups represented were government, banking/finance, and manufacturing. All of the respondents had completed high school; 11 had completed business college; 3 hold two-year college degrees, and 6 hold four-year college degrees. Three of the respondents hold a master's degree, and one respondent had completed a Ph.D. degree.

The most frequent sources of word processing training reported by the respondents were vendor-sponsored hands-on training (64 percent) and professional seminars (40 percent). Vendor-sponsored management training and on-the-job training were also mentioned by 36 percent of the respondents as sources of word processing training.

The Implementation of Word Processing

The first major research question addressed was: How is the word processing concept being implemented in businesses with word processing systems in the Richmond metropolitan area?

The number of employees in the word processing installations surveyed ranged from 2 to 29. The mean staff size was 9. Only ten percent of the respondents indicated that their word processing systems were in operation for 2 eight-hour shifts, and only 6 percent reported the use of 1½ shifts. The modular form of office layout was reported by 58 percent of the respondents; in addition, many of the respondents indicated that they plan to convert to this form of office layout in the near future.

The organizational mode reported by 96 percent of the respondents was the centralized word processing system. An average of 8 operators were employed in this form of organization to serve an average of 171 principals. Seven of the respondents reported having a centralized administrative support system, while four reported having a decentralized administrative support system.

A majority of the respondents (58 percent) indicated that their word processing system was responsible for all organizational typing tasks. Forty percent indicated that their system was responsible for special applications only. A slightly smaller percentage reported being responsible for special applications and overflow only.

The CRT display standalone is in use by 70 percent of the respondents, while 52 percent reported the use of blind standalones.

Shared-logic and photocomposition equipment is in use to a lesser degree (by 24 and 12 percent, respectively).

Memos and letters represented 33 percent of the total workload for 88 percent of the respondents. Repetitive documents accounted for 18 percent of the total workload. Statistical and textual reports accounted for approximately 25 percent of the workload. Medical documents are processed primarily by medical specialty organizations; legal documents are processed by banks, insurance companies, and state agencies in addition to law firms.

The most frequent sources of input for memos and letters are longhand and machine dictation (from a possible 3.0, the mean ratings equal 2.6 and 2.3, respectively). Prerecorded input is the most frequent mode of origination for repetitive documents (mean rating equals 2.8). New repetitive documents are originated in longhand. OCR is used almost exclusively for input by the four law firms that were studied.

Employment Patterns in Word Processing

The second major question addressed by this investigation was: What employment patterns exist in businesses with word processing systems in the Richmond metropolitan area?

The 50 word processing managers who participated in the study reported 20 different job titles. Word processing supervisor and word processing manager were the most frequent job titles (46 percent). Thirty-six percent of the respondents have recently been promoted to or hired for their word processing management position. A large

number (80 percent) of the respondents were promoted into their current position from another word processing position. Fifty-eight percent of the respondents have had three years or more of supervisory experience. Additionally, 70 percent of the respondents have had experience as a word processing operator.

Seventy percent of the respondents reported that their word processing system is managed by both a word processing manager and a word processing supervisor. Fifty percent of the respondents indicated that the manager was responsible for other functions, i.e., administrative support, data processing, or records management. Eleven respondents reported that the word processing supervisor was a working supervisor.

The respondents reported 25 job classifications for word processing personnel. The most common supervisory job classification, reported by forty percent of the respondents, was word processing supervisor; the most common operational job classification, reported by 36 percent of the respondents, was word processing operator. Further, the highest average employment was in the word processing operator positions. The highest five-year projected employment growth is also expected in the word processing operator positions.

Special word processing job classifications created by the organizations that participated in the study include word processing proofreader, word processing trainer, word processing analyst, word processing input/output clerk, and phototypesetting specialist. Because these are staff support positions, the average employment in

these positions ranges from 1 to 2 individuals in each organization. Employment in these positions is not expected to increase substantially.

Five-Year Projections

The third major question was: What plans do businesses with word processing systems in the Richmond metropolitan area have for expansion of the word processing system and for application of emerging technologies?

Approximately 90 percent of the respondents projected that the volume and variety of the work processed by their systems will increase. The use of dictated input is expected to increase by 78 percent of the respondents; the use of handwritten input is expected to decrease. The number of equipped work stations and work stations with improved equipment capabilities is expected to increase by 90 percent of the respondents. According to three-fourths of the respondents, the increased productivity of this new equipment makes an increase in overtime or additional shifts unlikely.

A large majority of the respondents (90 percent) reported that the use of display-based and software-based systems will increase in the next five years. More than two-thirds of the respondents reported that word processing equipment systems integration, word processing/data processing interface, and telecommunications within organizations will increase. Approximately half of the respondents reported that the use of shared-logic systems and intelligent copiers will increase.

About one-third of the respondents projected that the use of photocomposition and telecommunications among organizations will increase. About one quarter of the respondents projected that the use of OCR, micrographics, and desk-top terminals for principals will increase.

Conclusions

The following conclusions are based on information that has emerged from this study. They are based on data provided by the 50 respondents from the Richmond metropolitan area and apply only to this area.

1. The existence of an expanding employment market for word processing personnel makes word processing instruction a viable option for educational institutions. The data revealed that the word processing employment market is expanding. Organizations are acquiring additional equipment, are planning to support more principals, and are creating additional positions for word processing personnel.
2. The expanding word processing employment market not only promises employment in entry-level (operational) positions, but also in special support positions. These special support positions that have emerged offer opportunities for career development.
3. Career paths leading to supervisory and management positions will exist to a limited extent for persons with operational

experience. Eighty percent of the respondents have been promoted from other word processing positions and 70 percent have had experience as a word processing operator.

4. Individuals preparing for word processing management careers need an understanding of the operation of a word processing system. Word processing systems are generally centralized, are responsible for all correspondence tasks, operate in a modular office layout, and are managed by both a word processing manager and a supervisor.

5. Individuals preparing for word processing operator careers should obtain experience processing a variety of documents on word processing equipment. Although the documents most frequently processed are memos/ letters, other applications are also being processed: repetitive letters; statistical, medical, legal, and textual documents; address lists; and forms design and completion. Therefore, individuals who are preparing for word processing operator careers should obtain experience processing a variety of documents on word processing equipment.

6. Managers and supervisors of word processing can benefit from a knowledge of the various input options as well as of equipment use and input procedures, such as machine dictation. Word processing operators need to be proficient in the processing of longhand, dictated, and typed input. Longhand, machine dictation, typed drafts, and optical character recognition are used as sources of document input in word processing systems. The use of

each input mode varies with the type of document and the organizational preference. The use of each input mode except longhand is anticipated to increase in the future although longhand is the most frequently used mode at this time.

7. Word processing managers and supervisors must be familiar with the capabilities of various types of word processing equipment. Word processing operators need a general knowledge of the equipment capabilities and need hands-on training on as many systems as possible. The CRT display systems (including standalones and shared-logic systems) are the most frequently used type of equipment and projections indicate that they will be the most frequently used equipment in five years. Blind standalones, one-line display standalones, and photocomposition equipment are also in use. The word processing equipment that will be used in the next five years will be software-based, will have advanced processing capabilities, and will come from a mixture of hardware vendors.

8. Individuals who are involved in or who are preparing for careers in word/information processing must keep up to date on current trends in office systems technology. Word processing educators must also keep abreast of the effect of changing technologies in the office. Emerging office systems technologies are in use, and their use will expand. The integration of word processing and data processing will increase. The use of shared-logic systems, intelligent copiers, electronic mail, desk-top terminals for

principals, OCR, and micrographics will increase. Telecommunications will be used to facilitate the distribution of processed documents and as a means for linking the technologies.

Recommendations

Based on the conclusions of this study, the following recommendations are offered for educational programs and for further research.

For Educational Programs

Word processing will be expanding in the Richmond metropolitan area within the next five years; additional employment will be available for word processing personnel. Accordingly, word processing instructional programs will be of mutual benefit to both the educational and the business community in the area.

1. The integration of word processing and data processing is predicted to increase in the next five years. Therefore, data processing concepts should be included in instructional programs for all word processing personnel.
2. Seventy percent of the respondents to this study have had prior experience as a word processing operator. Therefore, hands-on equipment training should be provided for both prospective word processing operators and managers/supervisors.
3. Inasmuch as word processing is a technology-based industry, courses and seminars that provide an update on current word processing hardware, software, and peripheral equipment should be offered periodically for individuals affected by word processing.

4. Since the modular, landscaped office will continue to be utilized in word processing office systems, instruction in office ergonomics should be provided for current and prospective word processing managers/supervisors.
5. The automated office is imminent; intelligent copiers, desk-top terminals for principals, micrographics, telecommunications, and photocomposition are already in use. Instruction in office automation technology should be offered for teachers, trainers, managers, and supervisors.
6. The use of machine dictation for input will continue and increase. Courses in effective dictation practices should be provided for principals and administrative secretaries. Instruction in dictation training procedures should be provided for teachers, trainers, and supervisors. Further, machine transcription training should be provided for word processing operational personnel.
7. Since many of the current equipment systems are programmable, instruction in programming is recommended for analysts, supervisors, and other support personnel.
8. Because of the predicted growth of word processing, instruction in word processing system organization should be offered for teachers, for current and prospective word processing supervisors/ managers, and for word processing personnel interested in career advancement.

For Further Study

1. Many of the respondents to this study indicated that their word processing systems were in the process of revision or expansion; i.e., equipment changes and additions, office layout changes, procedural changes, system decentralization, or total systems modification. Due to these anticipated changes and the fact that word processing is a dynamic industry, the researcher recommends that this research be replicated at least every five years.
2. Seventy percent of the respondents to this study have projected that the interface of data processing and word processing will increase in the next five years. As was indicated in the literature review, word processing industry experts are confident that such an interface will occur but are unsure as to how this interface will be accomplished. The researcher therefore recommends that an in-depth study be conducted of the process by which organizations plan to interface word processing and data processing, i.e, what specific equipment; input, output, and distribution procedures; and staffing will be used to accomplish such an interface.
3. This study of word processing systems in the Richmond area is applicable only to this locality. It is therefore recommended that educators who are involved in word processing instruction in other communities conduct a similar study. Such research will provide them with descriptive data on the implemention of word processing in their local service areas.

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APPENDIX A

SURVEY INSTRUMENT

A STUDY OF WORD PROCESSING SYSTEMS IN THE RICHMOND METROPOLITAN AREA

Name_____

Organization_____

Address_____

Telephone Number_____

1. What is your principal business activity?

_____	Banking/Finance	_____	Non-profit
_____	Education	_____	Publishing
_____	Engineering	_____	Real Estate
_____	Government	_____	Religion
_____	Insurance	_____	Retailing
_____	Legal	_____	Social Services
_____	Manufacturing	_____	Utility
_____	Medical	_____	Other

2. What is your job title?_____

3. For how many years have you held this title?_____

4. What was your former job title (immediately preceding the above)?

_____

5. How many years did you hold this title?_____

6. How many years' word processing supervisory experience have you had?

7. How many years' word processing operational experience have you had?

8. What is your level of educational attainment?

_____	High School	_____	Four-year degree
_____	Business College	_____	M.S. degree
_____	Community College	_____	Ph.D. degree
_____	Some College		

9. What specific word processing training have you had?_____

_____

10. Please check the statements below which apply to the management of your organization's word processing system:

_____ There is a word processing manager and/or a supervisor.

_____ The supervisor is a working supervisor (has keyboarding responsibilities).

_____ The word processing manager oversees other functions. Please specify._____

_____ There is a program coordinator.

_____ Other_____

11. What is the size of the word processing staff including yourself?

12. For how many shifts is the word processing system in operation?

13. What form of office layout is used in the word processing system?

_____ Traditional _____ Open (Modular)

Section I - ORGANIZATIONAL STRUCTURE OF THE WORD PROCESSING SYSTEM

Check ( ) YES or NO to indicate the word processing organizational structures that apply to your organization. For all YES items, complete the remaining columns with your best approximations.

ORGANIZATIONAL STRUCTURE*	YES	NO	HOW MANY	NO. OF OPERATORS EMPLOYED	NO. OF PRINCIPALS SERVED
Centralized Supervised WP System	___	___	___	___	___
Decentralized Supervised WP System	___	___	___	___	___
Centralized Supervised AS System	___	___	___	___	___
Decentralized Supervised AS System	___	___	___	___	___
Centralized WP/AS System	___	___	___	___	___
Decentralized WP/AS System	___	___	___	___	___
Supervised WP/AS Teams	___	___	___	___	___
Work Clusters	___	___	___	___	___
Other	___	___	___	___	___

*WP/AS = Word Processing/Administrative Support

Section II - ASSIGNMENT OF CORRESPONDENCE TASKS TO THE WP SYSTEM

Please check ( ) YES or NO to indicate whether the following statements apply to your organization s assignment of correspondence tasks to the WP system

	YES	NO
WP system is responsible for all typing tasks.	___	___
WP system is responsible for special typing applications only.	___	___
WP system is responsible for special typing applications and overflow.	___	___
WP equipment is used by secretaries outside the WP system.	___	___
Other _____	___	___

Section III - EQUIPMENT UTILIZATION IN THE WORD PROCESSING SYSTEM

Please check ( ) YES or NO to indicate whether the following types of word processing equipment are used in your organization. For all YES items, please complete the remaining columns.

TYPE OF EQUIPMENT	YES	NO	HOW MANY	COMMUNICATING FEATURE YES	COMMUNICATING FEATURE NO
Nondisplay Standalone	___	___	___	___	___
One-Line Display Standalone	___	___	___	___	___
CRT Display Standalone	___	___	___	___	___
Shared Logic System	___	___	___	___	___
Photocomposition	___	___	___	___	___
Other	___	___	___	___	___

Section IV - DOCUMENTS PROCESSED IN THE WORD PROCESSING SYSTEM

Please indicate what number of the total documents processed each month in the word processing system falls into each of the following categories. If exact numbers are not available, please estimate.

DOCUMENT CLASSIFICATION	NUMBER
Memos/Letters	____
Confidential Letters	____
Repetitive Letters/Paragraphs	____
Technical Reports	____
Statistical Reports/Financial Statements	____
Other Reports_____	____
Address Lists	____
Brochures/Newsletters	____
Forms Design	____
Forms Completion	____
Legal Documents	____
Medical Documents	____
Manuscripts for Publication	____
Mathematical Text (Requiring Calculations)	____
Records Processing (Files)	____
Other_____	____

Section V - MODE OF INPUT FOR DOCUMENTS PROCESSED IN THE WP SYSTEM

Please estimate the frequenncy of input modes for the following document classifications. (3=High, 75% and up; 2=Medium, 50% and up; 1=Low, 35% and up)

TYPES OF DOCUMENTS	LONG-HAND	TYPED DRAFT	DICTATION MEDIA	OCR	PRE-RECORDED
Memos/Letters	____	____	____	____	____
Confidential Letters	____	____	____	____	____
Repetitive Letters/Letters	____	____	____	____	____
Technical Reports	____	____	____	____	____
Statistical Reports	____	____	____	____	____
Other Reports_____	____	____	____	____	____
Address Lists	____	____	____	____	____
Brochures/Newsletters	____	____	____	____	____
Forms Design	____	____	____	____	____
Forms Completion	____	____	____	____	____
Legal Documents	____	____	____	____	____
Medical Documents	____	____	____	____	____
Manuscripts for Publication	____	____	____	____	____
Mathematical Text (Requiring Calculations)	____	____	____	____	____
Records Processing (Files)	____	____	____	____	____
Other_____	____	____	____	____	____

Section VI - JOB CLASSIFICATIONS AND EMPLOYMENT PROJECTIONS

Please check ( ) YES or NO to indicate which of the following job titles are used by your organization to describe the individuals who operate the word processing equipment. For each YES item, please indicate how many individuals are employed in this classification and how many additional personnel will be needed within five years.

JOB CLASSIFICATION	YES	NO	NUMBER EMPLOYED	FIVE-YEAR PROJECTIONS
Correspondence Secretary	___	___	___	___
Word Processing Operator	___	___	___	___
Word Processing Specialist	___	___	___	___
Word Processing Coordinator	___	___	___	___
Word Processing Supervisor	___	___	___	___
Word Processing Manager	___	___	___	___
Lead WP Operator	___	___	___	___
Word Processing Trainee	___	___	___	___
Information Processing Specialist	___	___	___	___
Secretary	___	___	___	___
Typist	___	___	___	___
Clerk/Typist	___	___	___	___
Machine Transcriber	___	___	___	___
Other_____	___	___	___	___

Section VII - OTHER JOB CLASSIFICATIONS WHICH HAVE BEEN CREATED FOR THE WORD PROCESSING SYSTEM

Please check ( ) YES or NO to indicate whether any of the following job classifications ahve been created by your organization for word processing personnel. Please also indicate how many additional personnel you would expect to employ in each classification within five years.

JOB CLASSIFICATION	YES	NO	NUMBER EMPLOYED	FIVE-YEAR PROJECTIONS
Word Processing Trainer	___	___	___	___
Word Processing Editor	___	___	___	___
Word Processing Proofreader	___	___	___	___
Word Processing Analyst	___	___	___	___
Word Processing Messenger	___	___	___	___
WP Input/Output Clerk	___	___	___	___
Administrative Secretary	___	___	___	___
Administrative Support Supervisor	___	___	___	___
Phototypesetting Specialist	___	___	___	___
Other_____	___	___	___	___

Section VIII - FIVE-YEAR PROJECTIONS FOR GROWTH AND EXPANSION OF THE WORD PROCESSING SYSTEM

After each of the following statements please check the one phrase which represents your preception of the decisions your organization will make within the next five years.

PROJECTIONS	WILL INCREASE	WILL DECREASE	WILL NOT CHANGE
Volume of typing tasks processed on WP equipment	___	___	___
Volume of typing tasks typed from typed draft copy	___	___	___
Volume of typing tasks typed from longhand	___	___	___
Volume of typing tasks typed from dictation media	___	___	___
Variety of tasks assigned to the WP System	___	___	___
Number of principals served by WP System	___	___	___
Amount of overtime incurred in the WP System	___	___	___
Number of equipped WP word stations	___	___	___
Present word processing equipment capabilities	___	___	___
Other trends_____	___	___	___

Section IX - FIVE-YEAR PROJECTIONS FOR APPLICATION OF EMERGING TECHNOLOGIES

Please indicate your perception of whether or not your organization will implement or continue to implement emerging technologies within five years.

APPLICATIONS	IN USE	WILL INCREASE	WILL DECREASE	WILL NOT CHANGE
Display-based (CRT) systems	___	___	___	___
Software-based WP systems	___	___	___	___
Shared-Logic systems	___	___	___	___
Integration of WP systems	___	___	___	___
OCR readers for input	___	___	___	___
Photocomposition	___	___	___	___
Computer Output Microfilm (COM)	___	___	___	___
Micrographic filing systems	___	___	___	___
Desk-Top Terminals (Principals')	___	___	___	___
Inter-company telecommunications	___	___	___	___
Intra-company telecommunications	___	___	___	___
WP/DP interface	___	___	___	___
Intelligent Copiers (Laser)	___	___	___	___
Other trends_____	___	___	___	___

APPENDIX B

TRANSMITTAL LETTER

WILLETTE W. HOBSON

Dear fellow WPAR member:

As a business educator and a graduate student at Virginia Tech, I am conducting a study of word processing systems in the Richmond area. WPAR will, of course, be the population for the study.

The descriptive data collected in the study will be of value to business educators, who are preparing students for the word processing industry, and to word processing professionals as well. Your cooperation is therefore vital to the success of this undertaking.

Enclosed is a copy of the instrument which will be used to collect the data. I will be calling you within the next week or so to set up a convenient time to collect this data. This will only require a half hour of your time. Your participation in this project will be most appreciated.

Yours sincerely,

Willette W. Hobson

dlr

Enclosure

APPENDIX C

PARTICIPATING ORGANIZATIONS

PARTICIPATING ORGANIZATIONS

Bank of Virginia Company
Best Products Company, Inc.
Blue Cross & Blue Shield of Virginia
*C & P Telephone Company
Central Fidelity Bank
Christian, Barton, Epps, Brent & Chappel
Christian Children's Fund
The Computer Company
Continental Telephone Company of Virginia
County of Henrico
CSX Corporation
Ernst & Whinney
Fidelity Bankers Life Insurance Co.
First & Merchants National Bank
Foreign Mission Board
Heritage Savings & Loan
Hunton & Williams
Lawyers Title Insurance Company
MCV/VCU Hospitals
Markel Service, Inc.
Mays, Valentine, Davenport & Moore
McGuire, Woods & Battle
Parker, Pollard & Brown
Phillip Morris, U.S.A.
A. M. Pullen & Company
Psychiatric Institute of Richmond, Inc.
*Reynolds Metals
Richmond Redevelopment & Housing Authority
A. H. Robins Company
U. S. Court of Appeals
*United Virginia Bank, Inc.
United Virginia Bank Card
Virginia Electric & Power Company
Virginia Division of Purchases & Supply
Virginia Department of Health Office of Health Care Programs
Virginia Department of Health Division of Vital Records & Health Statistics
Virginia Department of Management Analysis & Systems Development
Virginia Department of Planning & Budget
Virginia Department of Taxation
Virginia Division of Motor Vehicles
Virginia Employment Commission Manpower Research Division
Western Electric Company, Inc.

*Indicates multiple participation.

APPENDIX D

PANEL OF EXPERTS

PANEL OF EXPERTS

Business Educators

Dr. J. Howard Jackson
Chairman, Business Education and Office Administration
Virginia Commonwealth University
Richmond, Virginia

Ms. Linda Shifflette
Cooperative Office Education Coordinator
Bethel High School
Hampton, Virginia

Dr. Marietta Spring
Assistant Professor, Business Education and Office Administration
Virginia Commonwealth University
Richmond, Virginia

Ms. Marie Tyler
Business Division Chairman
Thomas Nelson Community College
Hampton, Virginia

Word Processing Managers/Supervisors

Ms. Rebecca Belch
Word Processing Manager
Norfolk Public Schools
Norfolk, Virginia

Ms. Gwen George
Division Chief, Office Automation Technology
Norfolk Naval Shipyard
Portsmouth, Virginia

Ms. Patricia Moffatt
Word Processing Supervisor
Headquarters Tactical Communications Area
Langley Air Force Base
Langley AFB, Virginia

Ms. Wanda C. Vaughan
Manager, Word Processing Center
Virginia National Bank
Norfolk, Virginia

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THE IMPLEMENTATION OF WORD PROCESSING IN THE RICHMOND, VIRGINIA, METROPOLITAN AREA

by

Willette Whitaker Hobson

(ABSTRACT)

The purpose of this study was to determine how word processing is being utilized in businesses with word processing systems in the Richmond metropolitan area. No data are available about the current implementation of word processing in a major metropolitan area in Virginia. This study was undertaken in order to add to the knowledge base that already exists about the implementation of word processing in other areas.

Fifty word processing managers and supervisors representing the Word Processing Association of Richmond, with members from the metropolitan area, comprised the study population. The study addressed the following research questions:

1. How is the word processing concept being implemented in businesses with word processing systems in the Richmond metropolitan area?
2. What employment patterns exist in businesses with word processing systems in the Richmond Metropolitan area?

3. What plans do businesses with word processing systems in the Richmond Metropolitan area have for expansion of the word processing system and for the application of emerging technologies?

A nine-part instrument was used to collect the data for the study. The instrument was validated by a panel of experts and was pretested before the data were collected. The Richmond metropolitan area was selected as the survey site because it contains a high concentration of organizations that are likely to benefit from the implementation of word processing. The Word Processing Association of Richmond was selected as the survey population because this group is representative of organizations utilizing word processing in the area. The researcher conducted fifty personal interviews between May and June, 1981.

The major findings of this study follow:

1. The word processing employment market is expanding. Organizations are acquiring additional equipment, are planning to support more principals, and are creating additional positions for word processing personnel.
2. Word processing systems are generally centralized, are responsible for all correspondence tasks, operate in a modular office layout, and are managed by both a word processing manager and a supervisor.

3. Although the documents most frequently processed are memos/letters, other applications are also being processed; statistical, medical, legal, and textual documents; address lists; and forms design and completion.

4. Longhand, machine dictation, typed drafts, and optical character recognition are used as sources of input in word processing. The use of each input mode varies with the type of document and the organizational preference.

5. The CRT display system is the most frequently used type of equipment and projections indicate that it will be the most frequently used type of equipment in five years. Blind standalones, oneline display systems, shared-logic systems, and photocomposition systems are also in use.

6. Emerging office systems technologies are in use and their use will expand. The integration of word processing and data processing will increase. The use of shared-logic, intelligent copiers, electronic mail, desk-top terminals for principals, OCR, micrographics, and telecommunication will increase.