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A Survey to Determine the Present Number and Types of Office Machines Used in the Middle Tennessee Area and the Educational Level Requirements in Using These Machines

Nancy G. Boyd

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A SURVEY TO DETERMINE THE PRESENT NUMBER AND TYPES OF OFFICE
MACHINES USED IN THE MIDDLE TENNESSEE AREA AND THE
EDUCATIONAL LEVEL REQUIREMENTS IN
USING THESE MACHINES

by

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B. S., Minot State College, 1965

An Independent Study
Submitted to the Faculty
of the
Graduate School
of the
University of North Dakota
in partial fulfillment of the requirements
for the Degree of
Master of Science

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1974

This independent study submitted by Nancy G. Boyd in partial fulfillment of the requirements for the Degree of Master of Science in the University of North Dakota, is hereby approved by the Committee under whom the work has been done.

(Chairman of Business & Vocational
Education Department)

(Advisor)

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CHAPTER I

INTRODUCTION

Since the Industrial Revolution, man has invented machines and power tools which have continued to change those methods of doing things once done by hand. In fact, automation has brought about a number of changes in man's social and economic organization.

Office machines have changed considerably in design and use over the past few years. Modern office machines are no longer a luxury; rather, these machines have become an integral part of the information processing in nearly all business offices. Each year new machines are introduced which accelerate office routine, insure accuracy, and meet the growing demand of business and industry. It is important that adequate instruction be provided to those who will need skills in the use of office machines.

The Statement of the Problem

The problem of this study was to assess office machine utilization in selected businesses located in the Middle Tennessee area.

The Purpose of the Study

The purpose of the study included: (1) identifying office machines currently utilized by businesses; (2) identifying the office

machine purchasing trends of businesses; and (3) identifying specific training level requirements as viewed by business executives. The analysis and interruption of these data could provide a basis for establishing guidelines and procedures for those training programs preparing future office personnel.

Need for the Study

The use and need for office machines has steadily and rapidly increased. With this increase the demand for competent office machine operators has also increased. During the past two decades there has been a continued proportional growth of office personnel classified as office machine operators. This increased demand for office machine operators has been evidenced by Tonne and Nanassy (1) who state:

Even in 1950, they comprised less than one percent of all business workers. In one decade, the number has more than doubled, and the proportion of machine operators to workers in all business occupations has now reached over 2 percent.

The projected employment opportunities for office machine operators is expected to continually increase through the 1970's.

The U. S. Bureau of Labor Statistics (2) has indicated that:

Thousands of job openings for office machine operators are expected each year through the 1970's. Most will result from the need to replace workers who retire or stop working for other reasons. Many machine operators are young women who stop working to care for their families. Other openings are expected to result from the introduction of new types of mechanical office equipment which speed recording, copying, and related office work. Still other openings will occur as business organizations continue to grow in size and number, and the volume of billing, computing, duplicating, and other work continues to mount.

A business education department needs to know how effectively its office machines curriculum is meeting the needs of its students.

An assessment of businesses within the working community is one

method of doing this. An assessment study can bring about curriculum change, develop realistic standards, bring course content up to date, identify preparation requirements, identify equipment used on the job, and determine which machine operations should be learned.

Limitations of the Study

The study was limited by the inability of the researcher to control the following:

1. Reliability of information and statistics obtained from business executives within the Middle Tennessee employment area.
2. The equipment being used by the Middle Tennessee businesses sampled.

Delimitations of the Study

The study was delimited to the following:

1. The Middle Tennessee employment area.
2. A random sampling of fifty businesses were surveyed.
3. Business establishments which employed a minimum of 100 total employees and which employed office workers were surveyed.

Definition of Terms

Terms that have a special meaning for understanding this study are:

Business executive.--An individual who is directly responsible for the administration and supervision of the office personnel and one who is able to identify specific office machine purchasing trends and training level requirements of future office machine operators for his particular business operation.

Job-entry personnel.--Individuals who possess those skills and knowledges through instructional programs or on-the-job experience considered necessary for immediate employment.

Middle Tennessee area.--A 22 county area encompassing the central portion of Tennessee which includes an approximate total population of 2.5 million.

Office machines curriculum.--A specific training program which is designed to provide instruction in the development of knowledges, skills, and abilities necessary for preparatory job-entry competencies in the operation and manipulations of those machines used to speed paperwork in the business office.

CHAPTER II

REVIEW OF PERTINENT LITERATURE

The Middle Tennessee Geographical Area

The length of Tennessee from east to west is 432 miles; whereas the extreme width is 112 miles. Because of its length, Tennessee is commonly divided into three distinct divisions which include East Tennessee, Middle Tennessee, and West Tennessee.

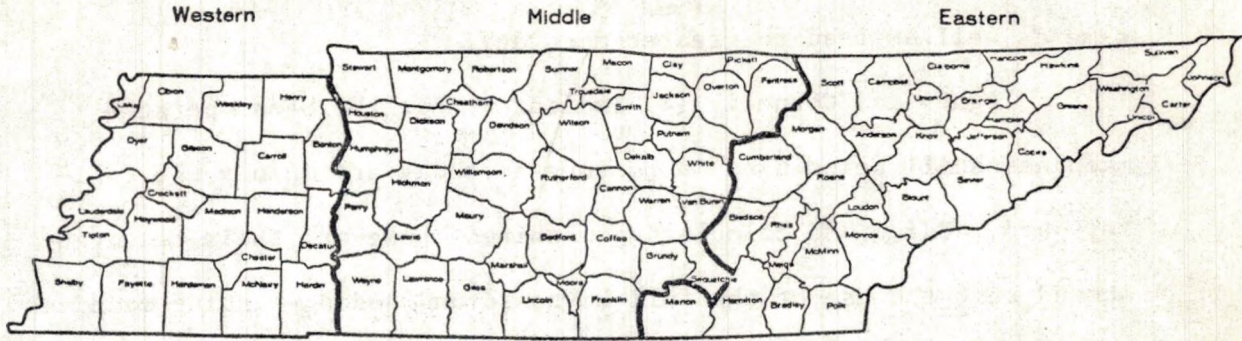
East Tennessee extends from the Unaka Ridges along the North Carolina Border, across the valley of the Tennessee River to the heights of the Cumberland Plateau, all the Highland Rim Plateau and the Central basin, and extends westward to the Tennessee River.

The Central basin is approximately 400 to 600 feet below the Highland Rim. This basin is elliptical in form, extending nearly across the state from northeast to southwest with an extreme width of approximately 60 miles. Near the basin's center is the city of Murfreesboro. Nashville, the capital of Tennessee, lies slightly to the northwest. This region is commonly referred to as Middle Tennessee.

West Tennessee extends from the Tennessee River to the western boarder of the state. The Tennessee Code Annotated (3) illustrates "The Tennessee Grand Divisions, 1967" of Western

Tennessee, Middle Tennessee, and Eastern Tennessee.

THE TENNESSEE GRAND DIVISIONS, 1967



Economics of Tennessee

Tennessee was primarily an agriculture state until the second quarter of the twentieth century. At that time, manufacturing became the major source of the state's economy. From the early 1930's to the late 1960's the number of manufacturing establishments tripled as well as the number of employees. The chief manufacturing industries include chemicals, food, textiles, electrical machinery, lumber and wood or pulp products, printing and publishing, and primary metals. Along with these chief industries, auxiliary companies also developed. All the industries and auxiliary companies maintained offices with a need for the use of office personnel and machines to process the various facets of these businesses.

Trends in Office Machines

For a variety of reasons, the work load of business offices has increased tremendously during the twentieth century and, because much of the work is routine and repetitive, many different types of office machines have been developed to process this data. These machines were developed on the basic principle of the wheel and

pulley but redesigned to be faster and quieter. The great demand for better and improved machines has helped to save both labor and time as well as lead to greater accuracy.

Agnew and Cornelia (4) indicated that the hand operated machines still being used in businesses today are mainly the full-keyboard, adding and calculating machines; however, their research showed that the use of the full-keyboard and adding-listing machines is rapidly declining. They advocated that training on hand-operated models should be discontinued unless local conditions displayed a need for such training.

Most office machines from the typewriter to data processing equipment deal with information. Norman F. Kallaus (5) stated: "Since all these machines deal with information, it is now evident that they should be called information machines since this is their basic purpose." He also indicated that the machines normally used in the business office such as the typewriter are also being used in the home and in the factory.

In 1971 Hayden's (6) research showed that the rotary calculator machines, 10-key electric adding-listing machines were used in almost 75 percent of the businesses surveyed. He also found that all sources agreed that business firms are phasing out the older and slower machines.

The typewriter is the most frequently used office machine as indicated by Modern Office Procedures (7). A recent survey found that 32.4 percent of the 413 business firms employing 100 or more personnel plan to purchase additional typewriters during the year 1974. Calculators were found to be the second most frequently listed

office machine to be purchased by the firms surveyed. Approximately 22.5 percent of the firms surveyed planned on copier and duplicator purchases during 1974, 15.2 percent microfilm equipment, 14.5 percent dictating equipment, 14.5 percent small computers and accounting machines, and 11.1 percent word processing equipment. The Modern Office Procedures survey also indicated:

The area of records processing shows the greatest growth. Microfilm shows the biggest increase of any category studied, with 15.2 percent of the respondents planning to buy, up 5.7 percent from 1973. Four out of ten who plan to buy microfilm are now nonusers. . . . In word processing, automated typing systems show a 1.9 percent increase in the number of executives planning to buy/lease. . . . The marked decrease in the number of respondents planning to buy regular office typewriters (from 37.4 percent in 1973 to 32.4 percent in 1974) may well reflect the critical evaluation executives are giving when weighing the merits of standard versus automated typing. . . . The number of firms planning calculator purchases will drop one percent in 1974. Ninety five percent of all purchases will be present users.

Office Machines Training

Instruction on office machines varies from school to school and in some instances the objectives are different. Agnew and Cornelia (4) and Mack (3) have indicated that schools should prepare students to an acquaintanceship level of skill. However, Vigen (9) indicated that office machines should be taught with employability level of competence or a vocational competence objective. Vigen supported his contention by stating:

Even though speed and accuracy are indeed vitally important to machine usage, they serve little purpose unless appropriately applied to realistic mathematical exercises that will give the student a real taste and feel of an actual office assignment.

Darst (10) found that an arithmetic review should be taught in conjunction with the office machines curriculum. He also indicated that computer data was audited and that the small office machines were used for auditing purposes which necessitated a mathematical background.

Bradley (11) recently conducted an extensive study of the usage of office machines in the metropolitan area of St. Louis. He found that too much diversity has been designed into many office machines courses; office machines education should be provided early in the curriculum. He also found that office calculating machines greatly facilitated the processing of information and that students interested in office employment should have a basic machines skill.

The geographic area as well as the prevalence of specific types of industry have been important considerations in the types of office machines to be included in training programs. Douglas, Blanford, and Anderson (12) stated:

In order to select wisely the office machines to be included in the clerical-practice course, the teacher needs to know what office machines are being used in the local business offices and in nearby communities. Many surveys have been made of the machines used in different cities, but the results have varied considerably. In St. Louis a survey showed that the office machines most commonly found in the business offices were typewriters, dictating and transcribing machines, adding machines, calculators, bookkeeping machines, and duplicating machines. In a similar survey in Pittsburgh, it was concluded that the most important machines to be taught in the Pittsburgh schools were the key-driven calculators, full-keyboard adding machines, bookkeeping machines, telephone switchboard, ten-key adding machines, check protectors, mimeographing machines, transcribing machines, and adding machines.

Because of these diversities the office machines teacher needs to become aware of the types of machines that are commonly

used in the business community. The students need to be proficient in the manipulation of the various kinds of machines which will affect their job performance.

Summary

The types and brands of office machine equipment as well as the number of their possible uses will continue to grow at an accelerated rate. The acquisition of all these machines is not feasible for most schools. However, office machine training programs have often been criticized because they feature the same curriculum design as well as the use of irrelevant equipment. An important part of creating and maintaining an effective office machines instructional program is establishing a favorable rapport with business.

The business executive can help the office machines teacher understand what business wants in prospective office machine operator employees as well as how the processing of information is changing in their business. Schools need to continually update their office machines curriculum so that students will acquire a workable skill in the operation of office machines as well as be ready for immediate employment.

CHAPTER III

PROCEDURES

The following headings represent the primary procedural activities of the study:

1. Development of research instrument.
2. Identification of population.
3. Collection and interpretation of the data.

Development of Research Instrument

A tentative questionnaire was prepared by the writer and submitted to her faculty advisor. The advisor recommended an alternate format of the questionnaire be considered so that it might better supply the data for which it was designed. The recommended changes and suggestions were incorporated into a second draft of the questionnaire and reviewed by the faculty advisor. After improvements were made, a final copy of the questionnaire was typed and submitted to the faculty advisor for final approval. The approved questionnaire (See Appendix A) was prepared for multi-copy processing and copies were reproduced for use in the study.

Identification of Population

Early in the investigation, a listing of Chambers of Commerce directors within the Middle Tennessee area was constructed. The

information utilized in developing this listing was provided by the executive secretary of the Rutherford County Chamber of Commerce, Murfreesboro, Tennessee. A total of 26 Chambers of Commerce were identified.

An individual letter (See Appendix B) was sent to each of the area Chambers of Commerce directors. The purpose of the letter was to briefly explain the nature of the proposed study and to solicit their cooperation in identifying businesses available to the researcher for possible participation in the study. Each director was asked to provide the names and addresses of those businesses which employed a minimum of 100 total employees. The selection of 100 employees was chosen by the researcher to assure that a reasonable number of office personnel were employed by each of the participating businesses.

A total of 68 businesses were identified by the directors and made available to the researcher. Fifty businesses were randomly selected from those identified by the directors to participate in the study.

Collection and Interpretation of the Data

An individually typed transmittal letter (See Appendix C) explaining the nature of the study were mailed to each of the fifty selected businesses along with a copy of the questionnaire for completion. As each questionnaire was returned, the responses to the items were recorded on tally sheets so that a running count was possible for each item in the questionnaire.

Four weeks after the original mailing of the questionnaires were sent, follow-up letters (See Appendix D) were mailed to the

business executives who had not returned the completed questionnaires. It was assumed that those who had not returned the completed questionnaire after the twelfth week was not interested in participation.

A total of 46 (92.00 percent) questionnaires were returned. The data on the completed questionnaires were compiled and tabulated by the researcher. Each item on the questionnaire were analyzed and the information was presented in table form. A narrative summary summary describing the results of each item was also presented. Finally, recommendations were made which could be helpful to the improvement of office machines training programs in the Middle Tennessee area.

CHAPTER IV

FINDINGS

This chapter presents a compilation and interpretation of data obtained from 46 Middle Tennessee area businesses. The data is classified according to the following headings: General Information, Office Machines Currently In Use, Purchasing Trends, School Training Level Requirements, Office Machines Utilization, and Brand Name Preferences.

General Information

Table 1, page 15, identifies the types of businesses within the Middle Tennessee area which participated in the survey. A total of 42 (91.30 percent) businesses were identified as manufacturing. Two (4.35 percent) of the respondents were identified as banking; whereas, one (2.17 percent) was identified as sales and one (2.17 percent) as construction.

Table 2, page 15, identifies the number of office employees within the participating Middle Tennessee area businesses. Fourteen (30.43 percent) of the respondents were identified which employ between 21 and 50 office personnel. An office personnel force between 11 and 20 employees was identified by 13 (28.26 percent) of the Middle Tennessee area businesses. Seven (15.22 percent)

TABLE 1

TYPES OF MIDDLE TENNESSEE AREA BUSINESSES AS
IDENTIFIED BY SURVEY PARTICIPANTS

Type of Business	Number of Businesses	Percentage of Businesses
Manufacturing	42	91.30
Banking	2	4.35
Sales	1	2.17
Construction	1	2.17
Totals	46	99.99

TABLE 2

NUMBER OF OFFICE EMPLOYEES WITHIN FORTY-SIX
MIDDLE TENNESSEE AREA BUSINESSES

Office Employees	Number of Businesses	Percentage of Businesses
1 - 10	6	13.04
11 - 20	13	28.26
21 - 50	14	30.43
51 - 100	7	15.22
101 - 150	2	4.35
151 - 200	2	4.35
Over 200	1	2.17
No Response	1	2.17
Totals	46	99.99

responding businesses were identified which employ between 51 and 100 office employees. One (2.17 percent) respondent identified and office personnel force of over 200 employees. One (2.17 percent) responding Middle Tennessee area business did not identify the number of office employees within the represented business.

Office Machines Currently In Use

The identification of office machines currently in use by the 46 Middle Tennessee area businesses is presented in Table 3, page 17. The electric typewriter was identified as the most frequently used office machine. A total of 469 electric typewriters was identified as currently being used by 44 (95.64 percent) of the responding Middle Tennessee area businesses. The ten-key adding machines was identified as an office machine which was currently being used by 38 (82.60 percent) of the responding businesses. A total of 404 ten-key adding machines was identified by these area businesses. A total of 379 electronic calculators was identified which are currently being used by 42 (91.30 percent) Middle Tennessee area businesses. Eight (17.39 percent) of the responding businesses were identified which currently use offset duplicating machines. A total of 10 offset duplicating machines was identified by these businesses. One (2.17 percent) respondent was identified which currently used shorthand machines.

Purchasing Trends

Table 4, page 18, identifies anticipated office machines purchasing trends within Middle Tennessee area businesses. Twelve businesses indicated that they would purchase less ten-key adding

TABLE 3

IDENTIFICATION OF OFFICE MACHINES CURRENTLY USED
BY MIDDLE TENNESSEE AREA BUSINESSES

Office Machines	Number of Businesses Using Machine	Percent of Businesses Using Machine	Total Number In All Businesses
Electric Typewriters	44	95.64	469
Ten-Key Adding Machines	38	82.60	404
Electronic Calculators	42	91.30	379
Printing Calculators (Mechanical)	28	60.87	195
Manual Typewriters	29	63.04	117
Full-Keyboard Adding Machines	19	41.30	92
Dictating/Transcribing Machines	20	43.48	88
Key Punch Machines	22	47.82	81
Dry Copy Machines	26	78.26	69
Fluid Duplicating (Ditto) Machines	27	58.69	36
Microfilm Equipment	9	19.56	32
Bookkeeping/Billing Machines	16	34.78	26
Wet Copy Machines	18	39.13	21
Automatic Typewriters	11	23.91	19
Stencil Duplicating (Mimeograph) Machines	16	34.78	19
Offset Duplicating Machines	8	17.39	10
Shorthand Machines	1	2.17	2

TABLE 4

IDENTIFICATION OF ANTICIPATED OFFICE MACHINES PURCHASING
TRENDS WITHIN MIDDLE TENNESSEE AREA BUSINESSES

Office Machines	Purchasing Trends		
	Less	Same	More
Full-Keyboard Adding Machine	11	5	2
Ten-Key Adding Machines	12	19	5
Bookkeeping/Billing Machines	9	4	1
Printing Calculators (Mechanical)	11	10	6
Electronic Calculators	2	12	27
Key Punch Machines	--	14	7
Dry Copy Machines	4	25	5
Wet Copy Machines	6	10	1
Dictating/Transcription Machines	2	15	2
Fluid Duplicating (Ditto)	7	15	1
Stencil Duplicating (Mimeograph)	6	8	1
Offset Duplicating Machines	2	5	--
Shorthand Machines	--	1	--
Automatic Typewriters	1	4	3
Electric Typewriters	1	23	12
Manual Typewriters	12	11	1
Microfilm Equipment	1	7	1

machines and manual typewriters while eleven businesses would purchase less full-key adding and printing calculators.

The dry copy machine was the most frequently identified office machine in which anticipated purchasing trends would remain the same. Twenty-five businesses indicated that dry copy machines purchases would remain the same. Twenty-three responding businesses indicated that electric typewriter purchases would remain the same.

The electronic calculator was the most frequently identified office machine in which anticipated purchasing increases were identified. Twenty-seven businesses indicated that they would purchase additional electronic calculators. Twelve companies indicated an anticipated increase in the purchase of electric typewriters. No additional purchases were anticipated by the businesses for the offset duplicating machine or the shorthand machines.

School Training Level Requirements

Table 5, page 20, identifies office machine school training level requirements as identified by Middle Tennessee area businesses. Thirty-four businesses were identified which requires their employees to have had electric typewriter training while 18 businesses required manual typewriter training. No school training level requirements were identified for the full-keyboard adding, dry copy, stencil duplicating, shorthand machines, or the microfilming equipment.

Twenty-five businesses indicated school training was desirable on the electronic calculator. Eighteen responding businesses indicated that school training was desirable on the ten-key adding machine while 17 identified a desirable school training on the printing calculator. The Middle Tennessee area businesses indicated that school training was desirable on each office machine identified.

TABLE 5

OFFICE MACHINES SCHOOL TRAINING LEVEL REQUIREMENTS
AS IDENTIFIED BY MIDDLE TENNESSEE AREA BUSINESSES

Office Machines	Training Level Requirements		
	Required	Desirable	Not Needed
Full-Keyboard Adding Machines	--	9	9
Ten-Key Adding Machines	1	18	11
Bookkeeping/Billing Machines	5	8	--
Printing Calculators (Mechanical)	2	17	5
Electronic Calculators	2	25	9
Key Punch Machines	9	12	1
Dry Copy Machines	--	5	24
Wet Copy Machines	1	4	10
Dictating/Transcribing Machines	4	10	3
Fluid Duplicating (Ditto)	1	12	9
Stencil Duplicating (Mimeograph)	--	7	9
Offset Duplicating Machines	2	4	2
Shorthand Machines	--	1	--
Automatic Typewriters	3	6	--
Electric Typewriters	34	4	--
Manual Typewriters	18	5	1
Microfilm Equipment	--	5	2

Twenty-four participating businesses indicated that school training was not needed for operating the dry copy machine. Eleven businesses indicated training was not needed for the ten-key adding

machines while ten businesses indicated that training was not needed on the full-keyboard adding machine, the electronic calculator, the fluid duplicator, or the stencil duplicating machines.

Office Machines Utilization

Table 6, page 22, identifies the percentage of male and female utilizing office machines as identified by participating Middle Tennessee area businesses. Twenty-nine companies identified that between 91-100 percent of female employees utilized the electric typewriter while only six companies identified that between 1-29 percent of male employees utilized the electric typewriter. Sixteen companies identified that between 91-100 percent of female employees utilized each the key punch machine and the manual typewriter. Ten companies identified that between 91-100 percent of female employees utilized each the bookkeeping/billing machine, the fluid duplicating machine, and the stencil duplicating machine. Males also utilized the above machines but at a much smaller percentage.

The females had complete utilization of the shorthand machines and the automatic typewriters of those businesses surveyed. Seven companies identified that between 91-100 percent of male employees utilized the offset duplicating machine while only three companies identified that between 91-100 percent of female employees utilized the offset duplicating machine. The electronic calculator was the only machine that was equally used by both male and female.

Table 7, page 24, identifies the utilization of office machines as indicated by Middle Tennessee area businesses. The electric typewriter was the most frequently identified office machine as being fully utilized by office personnel. A total of 22 (67.67 percent)

TABLE 6

OFFICE MACHINES USE BY PERSONNEL WITHIN MIDDLE TENNESSEE AREA BUSINESSES

Office Machine	Percentage of Use by Male						Percentage of Use by Female					
	1-29	30-49	50	51-70	71-90	91-100	1-29	30-49	50	51-70	71-90	91-100
Full-Keyboard Adding Machine	3	-	1	-	1	3	1	-	1	-	3	8
Ten-Key Adding Machine	11	5	8	1	-	2	-	1	8	6	11	4
Bookkeeping/Billing Machine	-	-	-	-	-	1	-	-	-	-	-	10
Printing Calculator (Mechanical)	2	1	7	-	1	3	1	-	7	1	2	7
Electronic Calculator	4	1	6	7	5	5	5	7	6	1	3	5
Key Punch Machine	-	-	2	-	1	-	1	-	2	-	-	16
Dry Copy Machine	10	1	9	1	-	2	-	1	9	1	9	6
Wet Copy Machine	2	-	6	-	-	2	-	-	5	-	2	2
Dictating/Transcribing Machine	-	-	8	1	-	-	-	1	8	-	-	8
Fluid Duplicating (Ditto)	-	-	2	-	2	-	2	-	2	-	-	10
Stencil Duplicating (Mimeograph)	-	-	-	-	-	2	-	-	-	-	-	10
Offset Duplicating Machine	-	-	-	-	-	7	-	-	-	-	-	3
Shorthand Machine	-	-	-	-	-	-	-	-	-	-	-	1
Automatic Typewriter	-	-	-	-	-	-	-	-	-	-	-	9

TABLE 6--Continued

Office Machine	Percentage of Use by Male						Percentage of Use by Female					
	1-29	30-49	50	51-70	71-90	91-100	1-29	30-49	50	51-70	71-90	91-100
Electric Typewriter	6	1	-	-	-	-	-	-	-	1	5	29
Manual Typewriter	3	-	1	-	-	3	-	-	-	-	3	16
Microfilm Equipment	1	-	-	1	-	-	-	1	-	-	1	2

TABLE 7

IDENTIFICATION OF OFFICE MACHINES UTILIZATION WITHIN
PARTICIPATING MIDDLE TENNESSEE AREA BUSINESSES

Office Machine	Fully Utilized	Percentage Fully Utilized	Not Fully Utilized	Percentage Not Fully Utilized
Electric Typewriter	22	67.67	11	33.33
Electronic Calculator	20	71.43	8	28.57
Dry Copy	19	76.00	6	24.00
Ten-Key Adding	16	55.17	13	44.83
Printing Calculator (Mechanical)	15	65.22	8	34.78
Key Punch	12	70.59	5	29.41
Manual Typewriter	10	52.63	9	47.37
Dictating/Transcribing	9	47.06	9	52.94
Full-Keyboard Adding	7	46.67	8	53.33
Wet Copy	7	52.85	6	46.15
Fluid Duplicating (Ditto)	7	46.67	8	53.33
Stencil Duplicating (Mimeograph)	5	41.67	7	58.33
Offset Duplicating	5	50.00	5	50.00
Bookkeeping/Billing	4	40.00	6	60.00
Automatic Typewriter	4	50.00	4	50.00
Microfilm Equipment	3	75.00	1	25.00
Shorthand Machine	1	100.00	0	-- --

businesses indicated a full utilization of the electric typewriter while 11 (33.33 percent) respondents indicated that the electric typewriter was not fully utilized. Twenty (71.43 percent) area businesses identified the electronic calculator as being fully utilized; whereas, eight (28.57 percent) respondents indicated that the electronic calculator was not fully utilized.

Dry copy office machines were identified as being fully utilized by 19 (76.00 percent) of the responding businesses while six (24.00 percent) respondents indicated that dry copy office machines were not fully utilized. Sixteen (55.17 percent) area businesses identified a full utilization of ten-key adding machines while 13 (44.83 percent) respondents reported that these office machines were not fully utilized.

Table 8, page 26, identifies office machines utilization by job entry personnel within Middle Tennessee area businesses. A total of 21 (84.00 percent) responding businesses indicated that the ten-key adding machine was utilized by job entry personnel while four (16.00 percent) of the respondents identified a non utilization by job entry personnel. The electric typewriter was identified as utilized by job entry personnel in 19 (70.37 percent) responding businesses; whereas, it was identified as not utilized by job entry personnel in eight (29.63 percent) businesses.

Thirteen (76.47 percent) respondents identified the printing calculator as utilized by job entry personnel while four (23.53 percent) indicated that the office machine was not utilized by job entry personnel. The electronic calculator was identified as utilized by job entry personnel in 13 (59.09 percent) of the Middle Tennessee area businesses; whereas, the use of the electronic calculator was

TABLE 8

OFFICE MACHINES UTILIZATION BY JOB ENTRY PERSONNEL
AS IDENTIFIED BY MIDDLE TENNESSEE AREA BUSINESSES

Office Machine	Utilized By Job Entry Personnel		Not Utilized By Job Entry Personnel	
	N*	%	N	%
Ten-Key Adding	21	84.00	4	16.00
Electric Typewriter	19	70.37	8	29.63
Printing Calculator (Mechanical)	13	76.47	4	23.53
Electronic Calculator	13	59.09	9	40.91
Dry Copy	12	60.00	8	40.00
Key Punch	11	78.57	3	21.43
Manual Typewriter	11	68.75	5	31.25
Wet Copy	9	69.23	4	30.77
Full-Keyboard Adding	8	61.54	5	38.46
Automatic Typewriter	7	87.50	1	12.50
Dictation/Transcription	6	42.86	8	57.14
Stencil Duplicating (Mimeograph)	6	60.00	4	40.00
Bookkeeping/Billing	5	50.00	5	50.00
Fluid Duplicating (Ditto)	4	44.44	5	55.56
Offset Duplicating	3	42.86	4	57.14
Microfilm Equipment	2	100.00	0	-- --
Shorthand Machine	1	100.00	0	-- --

*N refers to the number of businesses in which job entry personnel either utilize or do not utilize office machines.

not available to job entry personnel in nine (40.91 percent) area businesses. Two (100 percent) businesses were identified in which job entry personnel utilize microfilm equipment.

Brand Name Preferences

Table 9, page 28, lists ten-key and full-keyboard adding machine brand name preferences as identified by Middle Tennessee area businesses. Burroughs was the most frequently identified adding machine brand name preference by the responding businesses. Five (13.16 percent) businesses identified a Burroughs preference for the ten-key adding machine; whereas, four (21.05 percent) businesses identified a Burroughs full-keyboard adding machine preference. Four (10.53 percent) responding businesses identified a Monroe ten-key brand name preference while three (15.79 percent) businesses preferred the Friden full-keyboard adding machine brand name. The Olivetti, Underwood, and Victor brand names were identified as ten-key adding machine preferences by three (7.89 percent) responding businesses. Four respondents indicated that specific ten-key and full-keyboard adding machine preferences were dependent upon available service. Four (10.53 percent) Middle Tennessee area businesses indicated no specific ten-key adding machine preference while one (5.26 percent) business indicated no specific full-keyboard adding machine brand preference.

Table 10, page 29, identifies specific bookkeeping/billing machine brand name preferences as indicated by Middle Tennessee area businesses. The National Cash Register brand name was the most frequently identified bookkeeping/billing machine preference. Five (31.25 percent) businesses identified the National Cash Register brand name preference. Two (12.50 percent) businesses identified

TABLE 9

IDENTIFICATION OF ADDING MACHINE BRAND NAME PREFERENCES
AS INDICATED BY MIDDLE TENNESSEE AREA BUSINESSES

Brand Name Preferences	Ten-Key		Full-Keyboard	
	Number	Percentage	Number	Percentage
Burroughs	5	13.16	4	21.05
Friden	1	2.63	3	15.79
Monroe	4	10.53	-	--- --
Olivetti	3	7.89	-	--- --
Underwood	3	7.89	-	--- --
Victor	3	7.89	-	--- --
Remington	2	5.26	-	--- --
Hermes	1	2.63	1	5.26
Marchant	-	--- --	1	5.26
SCM	-	--- --	1	5.26
Olympia	1	2.63	-	--- --
Dependent Upon Service	4	10.53	4	21.05
No Preference	4	10.53	1	5.26
No Response	7	18.42	4	21.05
Totals	38	99.99	19	99.98

Burroughs as the bookkeeping/billing machine brand preference; whereas, one (6.25 percent) identified Friden as the machine brand preference. Three (18.75 percent) Middle Tennessee area businesses indicated no specific brand name preference.

TABLE 10

IDENTIFICATION OF BOOKKEEPING/BILLING MACHINE BRAND NAME
PREFERENCES AS INDICATED BY MIDDLE TENNESSEE AREA BUSINESSES

Brand Name Preferences	Number	Percentage
National Cash Register	5	31.25
Burroughs	2	12.50
Friden	1	6.25
No Preference	3	18.75
No Response	5	31.25
Total	16	100.00

Table 11, page 30, identifies calculator brand name preferences as indicated by Middle Tennessee area businesses. Victor was the most frequently identified calculator brand name preference. Six (14.29 percent) responding businesses identified a Victor brand name preference for the electronic calculator while one (3.56 percent) respondent identified a Victor brand name preference for the printing calculator. Three (7.14 percent) responding businesses identified a Friden brand name preference for the electronic calculator as well as three (10.71 percent) for the printing calculator. The Monroe and Sharp were identified as electronic calculator brand name preferences by three (7.14 percent) respondents. Four responding businesses indicated that specific calculator machine brand name preferences were dependent upon available service. Six (14.29 percent) Middle Tennessee area businesses indicated no specific electronic calculator brand name preference while five (17.86 percent) respondents indicated no specific printing calculator brand name preferences.

TABLE 11

IDENTIFICATION OF CALCULATOR BRAND NAME PREFERENCES
AS INDICATED BY MIDDLE TENNESSEE AREA BUSINESSES

Brand Name Preferences	Electronic		Printing	
	Number	Percentage	Number	Percentage
Victor	6	14.29	1	3.57
Friden	3	7.14	3	10.71
Monroe	3	7.14	1	3.57
Olivetti	-	-- --	3	10.71
Sharp	3	7.14	1	3.57
Burroughs	2	4.76	-	-- --
Remington	1	2.38	2	7.14
Casio R-5	1	2.38	-	-- --
Citizen	1	2.38	-	-- --
Data Math	1	2.38	-	-- --
Marchant	1	2.38	1	3.57
SCM	1	2.38	-	-- --
Toshiba	1	2.38	-	-- --
Underwood	-	-- --	1	3.57
Unitrex	1	2.38	-	-- --
Dependent Upon Service	4	9.52	4	14.29
No Preference	6	14.29	5	17.86
No Response	7	16.67	6	21.43
Totals	42	99.99	28	99.99

Table 12, below, identifies key punch machine brand name preferences as indicated by Middle Tennessee area businesses. The IBM brand name was the most frequently identified key punch machine preference. Eleven (50.00 percent) respondents who currently use key punch machines indicated an IBM brand name preference. A dependence upon available service was identified as key punch machine brand name preference by three (13.64 percent) responding businesses. Two (9.09 percent) responding Middle Tennessee area businesses indicated no specific key punch machine brand name preference.

TABLE 12

IDENTIFICATION OF KEY PUNCH MACHINE BRAND NAME PREFERENCES
AS INDICATED BY MIDDLE TENNESSEE AREA BUSINESSES

Brand Name Preference	Number	Percentage
IBM	11	50.00
Bell	1	4.55
Friden	1	4.55
Mohawk	1	4.55
Xerox	1	4.55
Dependent Upon Service	3	13.64
No Preference	2	9.09
No Response	2	9.09
Totals	22	100.02

Table 13, page 32, lists brand name preferences of copy machines as indicated by Middle Tennessee area businesses. Xerox was the most frequently identified copy machine brand name preference. Fifteen

TABLE 13

IDENTIFICATION OF COPY MACHINE BRAND NAME PREFERENCES
AS INDICATED BY MIDDLE TENNESSEE AREA BUSINESSES

Brand Name Preference	Dry Copy		Wet Copy	
	Number	Percentage	Number	Percentage
Xerox	15	41.67	4	22.22
IBM	5	13.89	1	5.56
Bruning Diago	-	-- --	2	11.11
Minolta	-	-- --	2	11.11
AB Dick	1	2.78	1	5.56
AM 2000	1	2.78	-	-- --
Blu Ray	-	-- --	1	5.56
Honeywell	1	2.78	-	-- --
Ninolifax	1	2.78	-	-- --
Remington	-	-- --	1	5.56
Sem	1	2.78	1	5.56
Dependent Upon Service	4	11.11	-	-- --
No Preference	4	11.11	4	22.22
No Response	3	8.33	1	5.56
Totals	36	100.01	18	100.02

(41.67 percent) respondents identified Xerox as the brand name preference for dry copy machines while four (22.22 percent) responding businesses identified Xerox as the brand name preference for wet copy machines. Five (13.89 percent) respondents identified the IBM dry copy machine brand name preference and one (5.56 percent) responding business identified the IBM wet copy machine brand name. The Bruning Diago and Minolta brand names were identified as wet copy machine preferences by

two (11.11 percent) responding businesses. Four (11.11 percent) respondents indicated no specific dry copy brand name preference while four (22.22 percent) respondents indicated no specific wet copy machine preference.

Table 14, below, identifies dictating/transcribing machine brand name preferences as indicated by Middle Tennessee area businesses. IBM was the most frequently identified dictating/transcribing machine brand name preference. Five (25.00 percent) respondents indicated an IBM dictating/transcribing machine brand name preference. Four (20.00 percent) responding businesses indicated that dictating/transcribing machine brand name preferences were dependent upon available service while four (20.00 percent) respondents indicated no specific brand name preference.

TABLE 14

IDENTIFICATION OF DICTATING/TRANSCRIBING MACHINE BRAND NAME PREFERENCES AS INDICATED BY MIDDLE TENNESSEE AREA BUSINESSES

Brand Name Preference	Number	Percentage
IBM	5	25.00
Canier Bros.	1	5.00
Flexowriter	1	5.00
Lanicu	1	5.00
Norelco	1	5.00
Dependent Upon Service	4	20.00
No Preference	4	20.00
No Response	3	15.00
Totals	20	100.00

Table 15, page 35, identifies duplicating brand name preferences as indicated by Middle Tennessee area businesses. Ditto was the most frequently identified fluid duplicating brand name preference. Five (18.52 percent) responding businesses identified the Ditto brand name. Bell & Howell, IBM, Old Towner, and Standard were each identified as fluid duplicating brand name preference by one (3.70 percent) respondent. Four (14.81 percent) responding businesses indicated that fluid duplicating machine brand name preferences were dependent upon available service. Four (14.81 percent) responding businesses indicated no specific fluid duplicating brand name preference.

Gestetner was the most frequently identified stencil duplicating brand name preference. Three (18.75 percent) responding businesses identified the Gestetner brand name preference. Two (12.50 percent) respondents identified the A B Dick as their stencil duplicating brand name preference. Three (18.75 percent) responding Middle Tennessee area businesses indicated that stencil duplicating brand name preferences were dependent upon available service. Two (12.50 percent) respondents indicated no specific stencil duplicating machine brand name preference.

Multileth was the most frequently identified offset duplicating machine brand name preference. Three (37.50 percent) responding businesses identified the Multileth brand name preference. Addressograph, A I M, and Bohn Rex Rotary were each identified as offset duplicating machine brand name preferences by one (12.50 percent) responding businesses. Two (25.00 percent) respondents indicated that offset duplicating machine brand name preferences were dependent upon available service.

TABLE 15

IDENTIFICATION OF DUPLICATING MACHINE BRAND NAME PREFERENCES
AS IDENTIFIED BY MIDDLE TENNESSEE AREA BUSINESSES

Brand Name Preference	Fluid (Ditto)		Stencil (Mimeograph)		Offset	
	N*	%	N	%	N	%
Ditto	5	18.52	1	6.25	-	---
Gestetner	-	---	3	18.75	-	---
Multileth	-	---	1	6.25	3	37.50
A B Dick	-	---	2	12.50	-	---
Addressograph	-	---	1	6.25	1	12.50
AIM	-	---	-	---	1	12.50
Bell & Howell	1	3.70	-	---	-	---
Bohn M-4	-	---	1	6.25	-	---
Bohn Rex Rotary	-	---	-	---	1	12.50
IBM	1	3.70	-	---	-	---
Old Towner	1	3.70	-	---	-	---
Scriptomatic	-	---	1	6.25	-	---
Standard	1	3.70	-	---	-	---
Dependent Upon Service	4	14.81	3	18.75	2	25.00
No Preference	4	14.81	2	12.50	-	---
No Response	10	37.06	1	6.25	-	---
Totals	27	100.00	16	100.00	8	100.00

*N refers to the number of businesses. This abbreviation will be used in tables throughout the study.

Table 16, page 37, identifies typewriter brand name preferences as indicated by Middle Tennessee area. IBM was the most frequently identified electric typewriter brand name preference. A total of 24 (54.55 percent) respondents indicated an IBM electric typewriter brand name preference. Royal and Underwood were each identified by three (6.82 percent) responding businesses as electric typewriter brand name preferences. Four (9.09 percent) respondents indicated that electric typewriter brand name preferences were dependent upon available service. No specific electric typewriter brand name preference was indicated by four (9.09 percent) responding Middle Tennessee area businesses.

Royal was the most frequently identified manual typewriter brand name preference. Nine (34.62 percent) respondents identified the Royal brand name manual typewriter. Three (11.54 percent) responding businesses identified the Marchant as their manual typewriter brand name preference. Four (15.38 percent) respondents indicated that manual typewriter preferences were dependent upon available service. Four (15.38 percent) responding businesses indicated no specific manual typewriter brand name preference.

IBM was the most frequently identified automatic typewriter brand name preference. Seven (38.89 percent) respondents identified the IBM automatic typewriter. Royal and Western Union were each identified as an automatic typewriter preference by one (5.56 percent) responding business. Four (22.22 percent) respondents indicated that automatic typewriter preferences were dependent upon available service while four (22.22 percent) respondents did not identify a specific automatic typewriter preference.

TABLE 16

IDENTIFICATION OF TYPEWRITER BRAND NAME PREFERENCES AS
INDICATED BY MIDDLE TENNESSEE AREA BUSINESSES

Brand Name Preference	Electric		Manual		Automatic	
	N	%	N	%	N	%
IBM	24	54.55	-	-- --	7	38.89
Royal	3	6.82	9	34.62	1	5.56
Underwood	3	6.82	3	11.54	-	-- --
Marchant	1	2.27	1	3.85	-	-- --
Olivetti	1	2.27	-	-- --	-	-- --
Remington	-	-- --	1	3.85	-	-- --
Western Union	-	-- --	-	-- --	1	5.56
Dependent Upon Service	4	9.09	4	15.38	4	22.22
No Preference	4	9.09	4	15.38	4	22.22
No Response	4	9.09	4	15.38	1	5.56
Totals	44	100.00	26	100.00	18	100.01

Table 17, page 38, identifies microfilm brand name preferences as indicated by Middle Tennessee area businesses. Kodak was the most frequently identified microfilm equipment brand name preference. Three (33.33 percent) respondents identified the Kodak brand name preference. Memorex and 3-M were each identified as microfilm equipment brand name preference by one (11.11 percent) responding business. One (11.11 percent) respondent indicated that microfilm equipment brand name preference was dependent upon available service.

TABLE 17

IDENTIFICATION OF MICROFILM EQUIPMENT BRAND NAME PREFERENCES
AS INDICATED BY MIDDLE TENNESSEE AREA BUSINESSES

Brand Name Preference	Number	Percentage
Kodak	3	33.33
Memorex	1	11.11
3-M	1	11.11
Dependent Upon Service	1	11.11
No Preference	1	11.11
No Response	2	22.22
Totals	9	99.99

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The problem of this study was to assess office machine utilization in selected businesses within the Middle Tennessee area.

The purpose of this study included: (1) identifying office machines currently utilized by Middle Tennessee area businesses; (2) identifying the office machine purchasing trends of these businesses; and (3) identifying specific training level requirements.

To gather data for this study, a survey questionnaire was developed. The questionnaire was mailed to 50 randomly selected businesses within the Middle Tennessee area. A total of 46 (92.00 percent) completed questionnaires were returned. The data collected from these area businesses were compiled and tabulated by the researcher.

The following statements constitute a summary of the findings:

1. Manufacturing was represented by 42 of the 46 businesses with a range from less than 10 to over 200 office workers.
2. The electric typewriter was the most frequently identified office machine currently in use by the responding

businesses. Forty-four (95.64 percent) businesses utilizing a total of 469 electric typewriters were identified. Forty-two (91.30 percent) businesses utilized a total of 379 electronic calculators; whereas, 38 (82.60 percent) businesses utilized a total of 404 ten-key adding machines.

3. The electronic calculator was the most frequently identified office machine in which businesses anticipated additional purchases. A total of 27 businesses indicated additional electronic calculator purchases. Twelve businesses anticipated additional electric typewriter purchases while 23 responding businesses indicated that electric typewriter purchases would remain the same.
4. A school training program was identified as being required by 34 responding businesses on the use of the electric typewriter for prospective business office personnel. All categories of office machines identified had at least one respondent who indicated that school training was desirable for office personnel. The dry copy machine use was the most frequently identified office machine in which office personnel did not need school training.
5. Female employees were identified as using every type of office machine more than male employees except the offset duplicating machine and the electronic calculator. The electronic calculator was identified as utilized

by 28 male employees and utilized by 27 female employees; whereas, the offset duplicating machine was found to be utilized by 7 males and 3 female employees.

6. Twenty-two businesses identified the electric typewriter as being fully utilized; whereas, 11 businesses indicated that the electric typewriter was not fully utilized. The offset duplicating machine and the automatic typewriter were found to be fully utilized by 50 percent of the responding businesses.
7. Twenty-one respondents indicated that the ten-key adding machine was the most frequent office machine utilized by job entry personnel. Nineteen businesses indicated that the electric typewriter was being used by job entry personnel.
8. Brand name preferences were found to vary considerably from machine to machine; however, dependence upon service or no preference were found to remain fairly consistent. The adding machine brand name preference most frequently identified was Burroughs; whereas, the bookkeeping/billing brand name preference most frequently identified was the National Cash Register. The calculator brand name preference most frequently identified was the Victor.
9. IBM was the most frequently identified brand name preference for the key punch machine, dictating/transcription machines, electric typewriter, and the automatic typewriter. The manual typewriter preference by brand name identified by responding businesses was Royal.

10. Ditto was the brand name preference identified for fluid duplicating machines while Gestetner was the most frequently identified brand name preference for stencil duplicating machines. Multileth was identified as the brand name preference for offset duplicating machines.

Conclusions

Based upon the analysis of the questionnaire the following conclusions were made:

1. There was a wide range of the number of office workers within the businesses surveyed.
2. The electric typewriter was the most frequently used office machine with the electronic calculator identified as the second most frequently used office machine.
3. This survey made by the researcher agrees with the survey conducted by Modern Office Procedures in that there would be an increase in the purchasing of the electronic calculator and the electric typewriter. However, the Middle Tennessee area survey does not agree with the national survey in that only one business planned to purchase additional microfilm equipment; whereas, the Modern Office Procedures survey indicated that "microfilm shows the biggest increase of any category studied."
4. A varied instructional program would be necessary for office machines instructional programs with a major

emphasis being placed on the electric typewriter and the electronic calculator.

5. In purchasing office machines each brand should be considered along with the type of service the selling company provides and if any particular brand is used exclusively in the area.

Recommendations

Based upon the findings of this study, the following recommendations are suggested:

1. Schools offering instructional programs in office machines within their business education curriculum should conduct periodic follow-up studies and employment surveys which provide evidence of program effectiveness and needed improvement.
2. The ten-key adding machine, full-keyboard adding machine, printing calculator (mechanical), and manual typewriter instruction should receive less emphasis than the electronic calculator and the electric typewriter in an office machines instructional program.
3. Business teachers should periodically solicit the aide of area businessmen in planning and updating course content.
4. Field trips should be considered by the office machines teacher so that students can become familiar with office machines and equipment not available in the schools.

APPENDIX A

A SURVEY TO DETERMINE THE PRESENT NUMBER AND TYPES
OF OFFICE MACHINES USED IN THE MIDDLE TENNESSEE
AREA AND THE EDUCATIONAL LEVEL REQUIREMENTS
IN USING THESE MACHINES

DIRECTIONS: Please identify for each type of office machine
(1) approximate number in your firm; (2) purchasing
trends for your office needs within the next three
years; (3) the school training level requirements
for each machine type; (4) approximate percent of
office personnel using machines; (5) machine utiliza-
tion; (6) use by job-entry personnel; and (7) specific
machine brand preferred by your office.

Type of Business (check one)

<p>_____ Education</p> <p>_____ Government</p> <p>_____ Manufacturing</p> <p>_____ Mining</p>	<p>_____ Sales</p> <p>_____ Service</p> <p>_____ Other _____</p> <p>_____</p>
---	---

Check the approximate number of office personnel in your firm
(include clerical, secretarial).

_____ 1 - 10	_____ 101 - 150
_____ 11 - 20	_____ 151 - 200
_____ 21 - 50	_____ Over 200
_____ 51 - 100	

	Approx. Number	Purchasing Trends			School Training Level		
		Less	Same	More	Required	Desirable	Not Needed
Full-Keyboard Adding Machine							
Ten-Key Adding Machine							
Bookkeeping/Billing Machine							
Printing Calculators (Mechanical)							
Electronic Calculators							
Key Punch Machine							
Dry Copy Machine							
Wet Copy Machine							
Dictating/Transcribing Machine							
Fluid Duplicating (Ditto)							
Stencil Duplicating (Mimeograph)							
Offset Duplicating Machine							
Shorthand Machines							
Automatic Typewriters							
Electric Typewriters							
Manual Typewriters							
Microfilm							

	Percent using machine		Machine fully utilized		Used by job-entry personnel		Brand Preferred
	Male	Female	Yes	No	Yes	No	
Full-Keyboard Adding Machine							
Ten-Key Adding Machine							
Bookkeeping/Billing Machine							
Printing Calculators (Mechanical)							
Electronic Calculators							
Key Punch Machine							
Dry Copy Machine							
Wet Copy Machine							
Dictating/Transcribing Machine							
Fluid Duplicating (Ditto)							
Stencil Duplicating (Mimeograph)							
Offset Duplicating Machine							
Shorthand Machines							
Automatic Typewriters							
Electric Typewriters							
Manual Typewriters							
Microfilm							

APPENDIX B

July 9, 1973

Dear _____

The identification of changes in the way offices are organized, managed, and equipped is a continuous objective of educators who train potential office workers. Because executives want better prepared workers in today's office technologies, I would like to seek your assistance in making a study of businesses within the Middle Tennessee area.

The study will include an inventory of office machines presently in use by businesses. Also, the purchasing trends and the training level requirements of office machine operators as identified by executives will be analyzed. The study should result in a paper that will be of constructive assistance to school personnel responsible for teaching and preparing office machine curriculums.

Would you please send the names and addresses of those businesses within your area who employ a minimum of 100 total employees? Your assistance in this matter will be genuinely appreciated.

Sincerely

(Mrs.) Nancy G. Boyd

APPENDIX C

September 24, 1973

Dear _____

The identification of changes in the way offices are organized, managed, and equipped is a continuous objective of educators who train potential office workers. Because executives want better prepared workers in today's office technologies, I would like to seek your assistance in making a study of businesses within the Middle Tennessee area.

Effective instruction on office machines can only be given if we are aware of what machines you are using in your business and to what extent each of these machines is being used. Your cooperation is sought in order to make this information complete.

You can be assured that any information you provide will be kept in strict confidence. No identification of firms will be reported in the final results of this study.

To assure a reasonable degree of validity, your cooperation is requested. Your completing and returning the enclosed survey form promptly will be genuinely appreciated.

Sincerely

(Mrs.) Nancy G. Boyd

enc.

APPENDIX D

October 24, 1973

Dear _____

Some time ago I sent you a survey form seeking your assistance in making a study of businesses in the Middle Tennessee area. Although the study is progressing very nicely, I have not received a response from your firm. Only with your help can identification and use of office machines in the business world be completed. The information you provide could assist school personnel responsible for teaching and preparing office machine curriculums.

You can be assured that any information you provide will be kept in strict confidence. No identification of firms will be reported in the final results of this study.

To assure a reasonable degree of validity, your cooperation is requested. Your completing and returning the enclosed survey form promptly will be greatly appreciated.

Sincerely

(Mrs.) Nancy G. Boyd

enc.

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