

TRENDS IN THE USE OF OFFICE MACHINES  
IN SELECTED AREAS OF KENTUCKY

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A Study  
Presented to the  
Business Education Department  
Morehead State University

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In Partial Fulfillment of  
the Requirements for the  
Master in Business Education Degree

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by  
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Accepted by the faculty of the School of Business and Economics, Morehead State University, in partial fulfillment of the requirements for the Master in Business Education degree.

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Morehead State University, 1974

Director of Thesis: George Montgomery

The purpose of this study was to determine the types of adding and calculating machines being used in business offices in selected areas of Kentucky with implications for improvement of instruction in Business Calculations at Morehead State University.

The source of data was a questionnaire mailed to thirty major businesses located in the cities of Ashland, Covington, and Lexington. Data from sixteen returned questionnaires, or 53 percent, comprised the study.

The findings revealed that most companies require the majority of their office workers to use adding and calculating machines. Electronic calculators, rotary calculators, and ten-key adding machines were being used in the majority of business offices. Electronic calculators were used in 69 percent of the offices, ten-key adding machines were used in 100 percent of the offices, and rotary calculators were used in 56 percent of the offices.

Ten-key adding machines and electronic calculators were the only types of machines purchased by the majority of

business firms when they made their last purchase. The two reasons given most often for purchasing electronic calculators were speed and low noise level. It was also indicated that these two types of machines would be considered first by the majority of businesses when making future purchases.

From interviews with representatives of companies selling adding and calculating machines, it was found that 100 percent of the companies were selling electronic calculators, both printing and display models. Three, or 50 percent, of the companies were selling ten-key adding machines. Two, or 33 1/3 percent, were selling printing calculators. Rotary calculators and full-key adding machines were sold by 16 2/3 percent of the companies. No firms were selling key-driven calculators.

All six of the firms indicated a trend toward electronic calculators. Three, or 50 percent, emphasized printing electronic calculators over display models.

Five of the six representatives reported that businesses and educational organizations were purchasing primarily the same types of machines.

Four, or 67 percent, of the representatives recommended electronic calculators over mechanical machines. Fifty percent recommended printing electronics over display electronics because tapes are available for further checking.

It was found from the interviews that 83 1/3 percent of the company representatives believed that in the future business firms and educational organizations will be using

all electronic machines. The one negative response, which represented 16 2/3 percent of the sample, cited cost, value of regular mechanical machines, and maintenance as reasons for this.

Four of the six firms reported that greater than 50 percent of the total number of units sold were electronic machines.

Based on the findings of this study, it was concluded that the students enrolled in the Business Calculations course at Morehead State University were being given instruction on the full-key adding machine, which is being phased out by business firms and by companies selling adding and calculating machines. It was also concluded that more instruction should be given on such parts as memory banks, square root keys, accumulation keys, percentage keys, and constant keys.

The findings indicated that schools should purchase more electronic calculators and ten-key adding machines. Instruction on full-key adding machines and key-driven calculators should be limited to an acquaintanceship level, except in areas where these machines are still used. Students should be given more instruction on business applications, such as processing payrolls, invoices, purchase orders, and figuring discounts.

Accepted by: George Montgomery, Chairman

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## Chapter I

### THE PROBLEM

#### Introduction

"The technological developments of the sixties have so affected the office machines field that a complete re-appraisal of business uses and educational aims is urgently needed."<sup>1</sup> The use of certain types of machines is declining and the production trends of manufacturers are causing some machines to be completely eliminated. The future of selected types of adding and calculating machines will determine the type of instruction that should be given in the business machines course.

So that efficiency in the operation of the adding and calculating machines being used in the modern office may be developed, the office machines course must be revised to meet modern trends. The Business Calculations course at Morehead State University is currently offering instruction on electronic display, electronic printing, mechanical printing, and rotary calculators; and ten-key and full-key adding machines. (A more detailed machines list is given in Appendix L, page 68). The course must utilize best the business machines that

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<sup>1</sup>Peter L. Agnew, "Office Machine Trends," The Balance Sheet, Vol. LI (March, 1970), pp. 303-305.

will help business students acquire a skill that will make a significant contribution to their future success in business. The key to this success is learning to operate the types of adding and calculating machines that are used in the modern office.

### Statement of the Problem

The purpose of this study was to determine the types of adding and calculating machines being used in business offices in selected areas of Kentucky with implications for improvement of instruction in Business Calculations at Morehead State University.

### Hypotheses

The hypotheses listed below were formulated for this study:

1. The type of machine used in the Business Calculations course at Morehead State University that is not found in the majority of business offices will be the full-key adding machine.
2. Fewer than 10 percent of the offices will be using key-driven calculators.
3. Fewer than 25 percent of the offices will be using full-key adding machines.
4. Electronic calculators will be found in less than 50 percent of the businesses where less than 100 persons are employed in office positions.

5. Less than 50 percent of the firms will indicate they would consider rotary calculators for future purchases.

6. The majority of businesses will use machines of the ten-key variety.

7. All of the office machine companies selling adding and calculating machines will be selling electronics.

8. None of the office machine companies will be selling key-driven calculators or full-key adding machines.

9. The majority of office machine companies will report that electronic calculators make up at least 50 percent of sales in terms of number of units sold.

#### Need for the Study

One of the major aims of business education is to prepare students for the world of work. If educators are to accomplish this goal, the curriculum must be evaluated in terms of job requirements. The curriculum content must be changed to meet the needs of the modern office. Students must possess the needed skills for operating adding and calculating machines if they are to meet these job requirements.

A survey of businesses is an excellent way of determining what types of adding and calculating machines office workers are required to use and if the curriculum is preparing students to meet these requirements. Nolan, Hayden, and Malsbary state that every effort must be made to keep abreast

of the changes in business so as to provide the students with the necessary skills for initial employment.<sup>2</sup>

To meet the challenge of preparing students for office jobs using adding and calculating machines, the Business Calculations course must include instruction on the types of machines used in the modern office. The course must meet the needs of business as well as the needs of the students.

#### Limitations of the Study

The study was limited by:

1. The researcher's ability to prepare a valid questionnaire and to analyze the results obtained.
2. The honesty of the respondents in answering the questions on the questionnaire.

#### Delimitations of the Study

The study was delimited to include:

1. Only selected cities in Kentucky within a 150-mile area of Morehead State University with a population of 25,000 or more.
2. Only adding and calculating machines used in offices in these selected areas.

#### Definition of Terms Used

The terms on the following page were defined as they applied to this study:

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<sup>2</sup>C. A. Nolan, Carlos K. Hayden, and Dean R. Malsbary, Principles and Problems of Business Education (Cincinnati: South-Western Publishing Company, 1967), p. 60.

Adding Machines: Machines that perform the fundamental processes of addition, subtraction, multiplication, and division. These included ten-key and full-key machines.

Business Calculations: A course which provides students an opportunity to learn the basic fundamentals of mathematics while also learning to operate the various computational machines.

Calculating Machines: Machines that perform the fundamental processes of addition, subtraction, multiplication, and division automatically. These included electronic, rotary, printing, and key-driven machines.

Display Electronic Calculators: Electronic calculators which produce answers on a clear display. The numbers are large, lighted numbers.

Mechanical Machines: A term used to refer to a group of machines operating by gears and including full-key adding machines, key-driven calculators, printing calculators, rotary calculators, and ten-key adding machines.

Printing Electronic Calculators: Electronic calculators which print numbers and answers on a paper tape.

Printing/Display Electronic Calculators: Electronic calculators which can produce answers in a lighted display window and/or on a paper tape.

Trends: A word used to describe current practices among businesses.

## Chapter II

### REVIEW OF RELATED LITERATURE

The purpose of this study was to determine the types of adding and calculating machines being used in business offices in selected areas of Kentucky with implications for improvement of instruction in Business Calculations at Morehead State University.

Many studies have been conducted to ascertain the extent to which various types of office machines are used. In most of these studies, data were obtained from questionnaires sent to business firms. These firms ranged in size from those using less than 100 office workers to those employing 10,000 or more office workers. The firms also performed a diversity of activities or rendered varied services.

Studies have been conducted in many sections of the United States. All of these studies indicated that trends are determined by the activities of the businesses involved, rather than by the section of the United States being surveyed.

Studies concerning office machine trends have dealt with many subject areas. Through these studies, researchers have attempted to determine the following factors: (1) the problems of beginning office workers who are required to use

adding and calculating machines; (2) the types of machines that are used in the majority of business offices; (3) the types of machines that are used least by business and industry; (4) the future of certain types of machines; (5) the types of machines that should be considered by schools when making future purchases; and (6) the effect of future classroom instruction in office machines caused by these factors.

Studies indicate that the business curriculum has undergone many changes through the years. However, Douglas states: "Usually educational procedures, once established, tend to persist for some time regardless of additional needs for change."<sup>3</sup> He also points out that education is finding it difficult to provide students with the needed preparation for modern careers in business because equipment being used in the modern offices is far outdistancing the advances being made in the classroom.<sup>4</sup> Factors such as these have had a significant effect on the findings of research studies.

#### Problems of Beginning Office Workers

Surveys of businesses in different sections of the United States have pointed out some of the problems experienced by beginning office workers who are required to use adding and calculating machines. The primary purpose of all of these studies was to determine the problems of these

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<sup>3</sup>Lloyd V. Douglas, Business Education (Washington, D. C.: The Center for Applied Research in Education, Inc., 1963), p. 93.

<sup>4</sup>Ibid., p. 101.



beginning office workers as seen by employers in order to change the office machines course to meet the needs of business.

One study, which did not deal directly with problems but with tasks required of beginning office workers, was the NOBELS Project. NOBELS (New Office and Business Education Learning Systems) was a study which attempted to identify, classify, and analyze job tasks performed by beginning and intermediate level office workers in the 16-24 age groups who had earned less than a baccalaureate degree. Four universities (University of Georgia, State University of New York, University of Minnesota, and University of California, Los Angeles) served as primary data collection sources. A total of 300 office jobs were included. Data were collected through interviews. In the NOBELS study, criteria stressed accuracy under the pressure of time, necessity of meeting deadlines, coping with heavy work loads, and knowledge of machine operations and ability to make machine adjustments or minor repairs.<sup>5</sup> These criteria implied that beginning office workers need to know much more than how to operate an adding or calculating machine.

A similar study was conducted in the spring of 1972 by Clemmer, a teacher at Slatington High School, Slatington, PA. His was a questionnaire study designed to determine the necessary skills needed by beginning office workers to enter office positions. Clemmer's study included: (1) 252 subjects randomly selected from telephone directories, (2) all large

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<sup>5</sup>Lawrence Erickson, Basic Components of Office Work-- An Analysis of 300 Office Jobs, South-Western Monograph 123, May, 1971, p. 16.

companies within the survey area, and (3) all organizations within the school district that employed at least one office worker. Questionnaires were returned from various sources, including school districts, high schools, business schools, colleges, hotels, motels, legal firms, restaurants, public utilities, accounting firms, churches, insurance companies, banks, service organizations, manufacturing firms, retail establishments, hospitals, and employment agencies. A total of 161, or 63.9 percent, of the questionnaires mailed comprised the study. Those answering the questionnaire were asked to rate various skills of beginning office workers as essential, desirable, or not needed. Results of the Clemmer study that pertained to skills in the use of adding and calculating machines are indicated in the table below.

TABLE 1<sup>6</sup>

Skills in the Use of  
Adding Machines and Calculators

Skill	Essential	Desirable	Not Needed
Electronic Calculator (with tapes)	13.0%	24.2%	62.7%
Electronic Calculator (without tapes)	7.5	29.2	63.4
Full-Key Adding Machine	38.5	34.8	26.7
Key-Driven Calculator	13.0	24.2	62.7
Printing Calculator	11.8	20.5	67.7
Rotary Calculator	10.6	25.5	64.0
Ten-Key Adding Machine	47.8	39.8	12.4

<sup>6</sup>David L. Clemmer, "Office Skills Survey," The Balance Sheet, Vol. LIV (May, 1973), pp. 353-55.

These results of the Clemmer study indicated that the ability to operate the ten-key adding machine was rated as an essential skill by a greater number of organizations, 47.8 percent, than any other type of adding or calculating machine. The electronic calculators without tapes were being rated by the smallest percentage of organizations, 7.5 percent, as being essential.

In a study prepared by Calvert, a business teacher at Highstown High School in New Jersey, questionnaires were sent to fifty business firms within a 20-mile radius. The survey was concerned with bookkeeping positions for beginning workers. From a list of nine office machines, employers were asked to choose those that they felt beginning bookkeeping employees should be able to operate in order to complete their office duties. Of the 29 businesses who responded to the questionnaire, 87 percent listed adding machines.<sup>7</sup> Adding machines were ranked with typewriters.

A study dealing directly with problems of beginning office workers was completed in 1970 by Bradley. A questionnaire was sent to businesses in the St. Louis metropolitan area. Bradley reported in his findings that too much diversity has been designed into many office machines courses in

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<sup>7</sup>Marguerite L. Calvert, "Have You Heard From Your Business Community Lately?," The Balance Sheet, Vol. LIII (December, 1971-January, 1972), pp. 157-58.

an attempt to be original, unique, or "geared to the market."<sup>8</sup> Because of this diversity, many students have been given too much comprehensive training and not enough specialized training.

Hayden conducted a survey in which he made a comparison of the types of machines used in selected post high school institutions with machines used by business and industry. He found that many post-secondary institutions were providing instruction on several machines that were being phased out by businesses.<sup>9</sup>

#### Types of Machines Being Used Most

There have been many surveys conducted to determine the types of machines being used most frequently by business firms. A study was conducted by Agnew to determine the extent to which certain types of office machines were used in 200 business concerns located in and around the New York City area. Agnew found that approximately 35 percent of the machines used were rotary calculators, 31 percent were ten-key adding machines, 21 percent were full-key adding machines,

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<sup>8</sup>Robert Bradley, "An Analysis of Office Calculating Machines Usage in the St. Louis Metropolitan Area to Determine Basic Instructional Elements for a Collegiate Machines Program," (unpublished Doctor's dissertation, University of Iowa, 1970), p. 307.

<sup>9</sup>Charles Hayden, "A Comparative Study of Types of Machines Used in Office Machines Classes in Selected Post High School Institutions with Machines Used by Business and Industry," Business Education Forum, Vol. XXVI (October, 1971), p. 37.

8 percent were printing calculators, 2 percent were electronic calculators, and 2 percent were key-driven calculators.<sup>10</sup>

In a study by Hawkes to determine preferences in business machines in Sacramento, California, rotary calculators were preferred over key-driven calculators, two to one.

Findings reported by the NOBELS Project showed that 18 percent of the businesses interviewed required employees to operate business machines. Ninety-six percent of the adding machines in use were ten-key adding-listing machines. Again, rotary calculators ranked above key-driven calculators as far as use was concerned.

The findings of a study conducted in the San Francisco-Oakland, California, area indicated a 66 percent increase in the use of printing calculators by 90 firms.

In a 1970 survey, Hayden made a comparison of the types of machines used in office machines classes in post-secondary schools with machines used in business offices. Rotary calculators, ten-key adding machines, and full-key adding machines were used by almost three-fourths of the firms surveyed, and approximately three-fourths of the educational institutions surveyed indicated instruction on these machines.<sup>11</sup>

In an article published in the May, 1972, issue of the California Business Education Journal, Giordano pointed out that electronic calculators present one of the real

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<sup>10</sup>Peter L. Agnew, "Office Machine Trends," The Balance Sheet, Vol. LI (March, 1970), pp. 303-05.

<sup>11</sup>Hayden, op. cit.

bargains for business and industry, as well as the classroom. Giordano says, "basically, most machines provide the simplicity of a ten-key adding machine and the built-in features and the versatility of a calculator."<sup>12</sup>

This article also points out that in spite of the increased use and adoption of electronic calculators, instruction on a proficiency level of operation of all rotary-type calculators can be justified.<sup>13</sup> Giordano states that all the instruction may be minimized, but most all students should be expected to master at least one brand--Monroe, Friden, or Marchant. He points out that the vocational objective of most business programs justifies instruction on rotary-type calculators for attainment of a proficiency level of operation.

In an article in Business Education Forum, Malsbary stated that "the ten-key adding machine is the most commonly-used machine of its type in the business office, being used more than twice as much as the full-keyboard machine."<sup>14</sup> He also pointed out that rotary and printing calculators are still widely used. The trend is away from the key-driven calculators toward the use of printing calculators. There were only four types of equipment that were used by ten percent or more of the beginning office workers. Included were

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<sup>12</sup>Al Giordano, "Electronic Calculators in Business Machine Calculation Classes," California Business Education Journal, (May, 1972), pp. 19-20.

<sup>13</sup>Ibid.

<sup>14</sup>Dean R. Malsbary, ". . . Re-Evaluation of Business Education Based on Surveys," Business Education Forum, (January, 1968), pp. 16-18.

ten-key and full-key adding machines. Malsbary reported that supervisors feel that the schools should teach students to use office machines more efficiently.

#### Types of Machines Being Used Least

A study done by Anderson in 1967 reported a 14 percent decrease in the use of key-driven calculators over a ten-year period.<sup>15</sup>

In the Agnew study, only 1,500 of the 7,900 machines used by firms were full-keyboard machines. Only 138 machines were of the key-driven type.<sup>16</sup>

#### Future of Certain Types of Machines

The informal reports of salesmen on the production trends among machine manufacturers are of special value in predicting the future of selected types of machines. One manufacturer reports the complete elimination of its rotary calculator line. Another reports the "phasing out" of its rotary calculator production. All three major manufacturers report a shift from the production of electro-mechanical rotary calculators to the electronic ones--with and without tapes.<sup>17</sup>

Of the 135 models of calculators manufactured in the United States in 1968, 83 percent were ten-key models.

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<sup>15</sup>Lawrence Anderson, "The Use of Calculating Machines in 135 Firms in the San Francisco-Oakland Area," National Business Education Quarterly, Vol. XXL (Fall, 1968), p. 6.

<sup>16</sup>Agnew, op. cit.

<sup>17</sup>Ibid.

Electronic calculators comprised 48 percent of the total output, while production of printing calculators decreased. In 1968, they accounted for only 30 percent of the calculator output.<sup>18</sup>

In his May, 1972, article, Giordano pointed out that "the older full-keyboard adding and calculating machines should be replaced with the modern ten-keyboard adding and calculating machines whenever practical."<sup>19</sup>

#### Projected Purchasing Trends of Schools

In his article, Agnew stated: "Schools planning to replace outmoded or worn out rotary calculators should explore the advisability of substituting electronic calculators without tapes."<sup>20</sup>

In this same article, it was also pointed out that the sophisticated calculator with mathematical capacity may not be the business office model of tomorrow. The less expensive, non-algebraic, single visible answer dial calculator is more likely to be the model that best meets the needs of the business office. Unless local conditions warrant it, schools should limit their investment in these calculators until competition reduces the field.

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<sup>18</sup>Ibid.

<sup>19</sup>Giordano, op. cit.

<sup>20</sup>Agnew, op. cit.



## Chapter III

### PROCEDURES

The purpose of this study was to determine the types of adding and calculating machines being used in business offices in selected areas of Kentucky with implications for improvement of instruction in Business Calculations at Morehead State University.

#### Selection of Cities

The study was delimited to include only cities in Kentucky within a 150-mile area from Morehead State University with a population of 25,000 or more. The names of cities within a 150-mile area were determined by using a scaled map of Kentucky. After the names of cities within this area were determined, a copy of the 1970 U. S. Bureau of Census report for Kentucky was used to determine what cities had a total population of 25,000 or more. The cities of Ashland, Covington, and Lexington were the only three that met both requirements. Ashland had a population of 29,245 and was 64 miles from Morehead State University. Covington had a population of 52,535 and was 146 miles from Morehead State University. Lexington had a population of 108,137 and was 64 miles from Morehead State University.

### Selection of Businesses to be Surveyed

After determining the names of cities to be used in the survey, it was necessary to obtain a list of the names of businesses located in each city. A letter was sent to the Better Business Bureau in each city in an attempt to obtain these lists. (See Appendix A, page 45). The Better Business Bureau in each city was not able to supply such a list.

A letter was sent to the Chamber of Commerce in each city in an attempt to obtain the lists of businesses. (See Appendix A, page 45). A list was obtained from the Ashland Area Chamber of Commerce and the Greater Lexington Area Chamber of Commerce. However, a list was not obtained from the Northern Kentucky Chamber of Commerce. Therefore, the lists obtained from the two cities of Ashland and Lexington were disregarded and another source was sought.

Finally, a list of the major businesses in each city was obtained from booklets entitled Industrial Resources. One of these booklets was available for Ashland,<sup>21</sup> Covington,<sup>22</sup> and Lexington.<sup>23</sup> The booklets were prepared by the Kentucky Department of Commerce in cooperation with the respective Chambers of Commerce.

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<sup>21</sup>Kentucky Department of Commerce, Industrial Resources--Ashland Area Kentucky, 1970.

<sup>22</sup>Kentucky Department of Commerce, Industrial Resources--Northern Kentucky, 1971.

<sup>23</sup>Kentucky Department of Commerce, Industrial Resources--Lexington, Kentucky, 1970.

### Selection of Sample for Questionnaire Study

After a list of the major businesses in the three cities was compiled, a stratified random sample was made based on population. A total of thirty names was chosen. Based on population, seventeen, or 57 percent, of the firms were located in Lexington, eight, or 26 percent, were located in Covington, and five, or 17 percent, were located in Ashland. (See Appendix B, page 47).

### Collection of Data

Once the sample had been selected, a questionnaire was sent. The questionnaires (see Appendix D, page 51) were mailed on November 3, 1971. A postal card follow-up (see Appendix E, page 54) was sent out on November 10, 1971. A total of seventeen questionnaires were completed and returned.

Two companies did not return the questionnaires, but sent letters saying they could not complete the questionnaires because of the lack of time and staff. The questionnaire returned by one company listed the total number of employees in Kentucky and Ohio. Therefore, it was not included in the study.

A total of nineteen questionnaires, or 63 percent, were accounted for; and sixteen, or 53 percent, comprised the study. Of the sixteen returned questionnaires, four, or 25 percent, were from the Ashland area, five, or 31 percent, were from the Covington area, and seven, or 44 percent, were from the Lexington area.

### Selection of Companies to be Interviewed

After completion of the questionnaire portion of the study, the researcher desired additional information relating to office machine trends. It was decided that interviews with representatives of companies selling adding and calculating machines in the three areas randomly selected for the questionnaire survey--Ashland, Covington, and Lexington--would provide this data.

The next step was to compile a list of the companies selling adding and calculating machines in each selected city area. Letters were sent to the Chamber of Commerce in each area in an effort to obtain these lists. (See Appendix F, page 56). Lists could not be obtained from these sources.

The Ashland Area Chamber of Commerce and the Northern Kentucky Chamber of Commerce suggested the use of the yellow pages of telephone directories to obtain the needed data. A copy of the yellow pages from the Ashland and Covington/Cincinnati area telephone directories was used to obtain a list of the businesses in these two city areas. The Business Education Department at Morehead State University provided a list of the businesses in the Lexington area, since these businesses serve the Morehead area including the University.

It was also indicated in a letter from the Northern Kentucky Chamber of Commerce (see Appendix G, page 58) that Cincinnati and Covington are considered to be in the same geographical area as far as the customers they serve. As a result of the random sample taken, some of the businesses

had a Cincinnati, Ohio, address rather than a Covington, Kentucky, address. The researcher then decided that information obtained from the businesses located in Cincinnati would depict trends in the Covington area.

#### Selection of Sample to be Interviewed

It was then decided that representatives of two businesses in each area should be interviewed; therefore, two businesses were randomly selected from each list. Letters requesting interviews were sent to each of the six companies. (See Appendix H, page 60). One interview was scheduled, but no responses were received from five of the companies. Therefore, five additional names were randomly selected. Of these five companies, one granted an interview, one made no response, and three responded but did not grant interviews. A list of those companies not responding and those responding but not granting the interviews is given in Appendix I, page 62.

At this point, the researcher had scheduled only two interviews and decided to conduct the four remaining interviews by telephone. Four more names were randomly selected for the telephone interviews. Due to the small number of businesses in the Ashland area, it was necessary to contact by telephone two businesses that had previously been contacted by letter. A list of the six companies interviewed is given in Appendix J, page 64.

A list of selected interview questions was compiled and the six interviews were completed. (See Appendix K, page 66).

## Chapter IV

### FINDINGS

The primary purpose of this study was to determine the types of adding and calculating machines being used in business offices in selected areas of Kentucky with implications for improvement of instruction in Business Calculations at Morehead State University.

A total of thirty questionnaires were mailed to business firms in Ashland, Covington, and Lexington. (See Appendix D, page 51). Findings from the sixteen returned questionnaires are analyzed in the following pages.

#### Percent of Workers Using Adding and Calculating Machines

Table 2 on the following page indicates the total number of office workers employed by each company that returned the questionnaire. The number of office workers employed by the companies ranged from three to ninety-six.

Table 2 also shows the percent of these workers who were required to use adding and calculating machines in performing their duties.

Table 2 indicates that all office employees of Ashland Crafts, Incorporated, Ashland Publishing Company, Covington Trust & Banking Company, General Electric Company of Lexington, V. R. Wesson Division of Lexington, and Citizens

Table 2

Percent of Office Workers Required to Use  
Adding and Calculating Machines in Selected Companies

Company	Number of Workers	Percent Required to Use Machines
<u>Ashland Area</u>		
Ashland Crafts, Incorporated	5	100
Pennco, Incorporated	7	86
Ashland Publishing Company	13	100
National Mine Service Company	66	15
<u>Covington Area</u>		
Covington-Kenton County Health Dept.	5	60
Donaldson Art Sign Company	9	89
Union Light, Heat & Power Company	28	--
R. A. Jones & Company	40	50
Covington Trust & Banking Company	64	100
<u>Lexington Area</u>		
General Electric Company	3	100
Visumatic Industrial Products	10	60
V. R. Wesson Division	15	100
Bank of Lexington	35	57
Columbia Gas of Kentucky	41	73
Citizens Union National Bank & Trust	94	100
Bank of Commerce & Trust Company	96	73

Union National Bank & Trust Company of Lexington were required to use adding and calculating machines on the job.

All companies supplying the information, with the exception of National Mine Service Company of Ashland, reported that 50 percent or more of their office employees were required to use adding and calculating machines. Only 15 percent of the employees of National Mine Service Company were required to use adding and calculating machines on the

job. Union Light, Heat & Power Company made no response to this particular question on the questionnaire.

#### Types of Machines Used in Business Offices

Table 3 indicates the number of companies reporting the use of each type of adding and calculating machine.

Table 3

Types and Number of Machines Used  
in the Offices in Selected Businesses

Type of Machine	Number of Responses	Percent of Responses
Electronic Calculator	11	69
Full-Key Adding Machine	7	44
Key-Driven Calculator	1	6
Printing Calculator	6	38
Rotary Calculator	9	56
Ten-Key Adding Machine	16	100

Table 3 shows the number of companies using each type of machine in their offices. Electronic calculators, rotary calculators, and ten-key adding machines were being used in the majority of the businesses. Seven, or 44 percent, of the companies were using full-key adding machines and six, or 38 percent, were using printing calculators. The key-driven calculator was being used by only six percent of the companies that returned the questionnaire.

#### Machines Included in Last Purchases

Table 4 on the following page shows the types of adding and calculating machines included in the last purchases of the companies reporting.



Table 4  
Types of Machines Included in Last  
Purchases by Companies in Selected Cities

Type of Machine	Number of Responses	Percent of Responses
Electronic Calculator	8	50
Full-Key Adding Machine	2	12.5
Key-Driven Calculator	-	--
Printing Calculator	2	12.5
Rotary Calculator	1	6
Ten-Key Adding Machine	9	56

Table 4 indicates that all of the types of adding and calculating machines listed on the questionnaire except the key-driven calculator were included in the last purchases made by the companies. However, the dates of these last purchases were not given. The table also indicates that machines of the electronic and ten-key type were purchased more than any others.

The companies were asked to give reasons for purchasing particular types of machines. The following responses were given:

Electronic Calculators

1. Speed.
2. Previous experience.
3. Low noise level.
4. Quietness.
5. Superior capabilities--ease of operation, speed, and small size.
6. To equip new branches.

7. Increased efficiency.
8. Replace old machines.

#### Rotary Calculators

1. More speed.

#### Printing Calculators

1. Tapes for permanent record and double checking.
2. Need for tapes.

#### Ten-Key Adding Machines

1. Sufficient for needs.
2. Serves requirements.
3. Need tapes.
4. Ease of operation and speed.
5. Expanding work loads.
6. Has all required capabilities.
7. Replace old machines.

#### Full-Key Adding Machines

1. Serves needs.

#### Machines Considered for Future Purchases

Table 5 on the following page shows the types of machines companies reported would be considered when making their next purchases.

Based on the findings reported in Table 5, electronic calculators and ten-key adding machines were listed by a majority of businesses as the types of machines to be considered when making future purchases.

Only 12.5 percent of the companies indicated they would consider full-key adding machines and printing

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Table 5

Machines Considered for Future  
Purchases by Selected Companies

Type of Machine	Number of Responses	Percent of Responses
Electronic Calculator	13	81
Full-Key Adding Machine	2	12.5
Key-Driven Calculator	--	--
Printing Calculator	2	12.5
Rotary Calculator	1	6
Ten-Key Adding Machine	8	50

calculators. Six percent of the companies stated that they would consider rotary calculators, and none of the firms indicated they would consider the purchase of key-driven calculators.

When asked to give reasons for considering particular types of machines, the following responses were given:

Electronic Calculators

1. Speed--noiseless.
2. Good experience with present machine.
3. Low noise level.
4. Speed, efficiency, and quietness.
5. Increased speed and ability to do chain calculations without repeating intermediate steps.
6. Cost and fastness.
7. Adaptability to needs, size, speed.
8. Added capabilities.

Rotary Calculators

1. Expansion of requirements.

### Printing Calculators

1. Need tapes as permanent records.
2. Speed.

### Ten-Key Adding Machines

1. Adaptability of machine to needs, size, speed.
2. Efficiency.
3. Past experience.

### Recommendations of Business Firms

The business firms were asked to make recommendations for training students to operate adding and calculating machines. The following responses were given:

1. Emphasis on accuracy.
2. Intensive training on a wide selection of machines, particularly electronic.
3. Students should learn the full capabilities of each type of machine.
4. Instruct on electronic and rotary calculators for the time being, then plan to switch to all electronics in five years or so.
5. Use fingering technique instead of using one finger to operate the machine. Do not look at the keys.
6. Students should be trained to do more complex problems, using all of the features available on the new calculators, especially memory banks.
7. Students should be as well trained on all types of machines as possible.
8. It is important to learn the many features of the electronic calculators.
9. Use the touch system with the ten-key adding machines. It is essential.
10. Students should be given more instruction on business applications--how to process an invoice, a payroll, etc.

### Interviews with Office Machines Salesmen

Upon completion of the questionnaire study, six interviews were conducted with representatives of companies selling adding and calculating machines. Two companies were selected from each of the three city areas of Ashland, Covington, and Lexington. (See Appendix J, page 64).

Types of Machines Being Sold. Table 6 on the following page shows the types of new machines being sold by the six interviewed representatives. The table is arranged according to city area.

Table 6 indicates that all six of the companies were selling electronic calculators, both display and printing models. Three, or 50 percent, of the companies were selling ten-key adding machines. Two, or 33 1/3 percent, were selling printing calculators. Rotary calculators and full-key adding machines were sold by 16 2/3 percent of the representatives. No firms were selling key-driven calculators.

When asked if they sold machines to both business firms and educational organizations, 100 percent of the representatives reported that they did.

The businesses were asked about the types of machines they find their customers primarily interested in at the present time. All six of the firms indicated a trend toward electronic calculators. Three, or 50 percent, emphasized printing electronics.

Table 6

Types of New Machines Being Sold  
by Selected Office Machines Companies

Area	Types of Machines
<u>Ashland Area</u>	
Ashland Office Supply, Inc.	Electronic Calculators (Display & Printing)
Kopp Office Supply, Inc.	Electronic Calculators (Display & Printing) Printing Calculators Ten-Key Adding Machines
<u>Covington Area</u>	
Burroughs Corporation	Electronic Calculators (Display & Printing) Full-Key Adding Machines Ten-Key Adding Machines
Peter Paul Service	Electronic Calculators (Display & Printing) Printing Calculators Rotary Calculators Ten-Key Adding Machines
<u>Lexington Area</u>	
Monroe Calculator Company	Electronic Calculators (Display, Printing, & Printing/Display)
Standard Business Machines	Electronic Calculators (Display, Printing, & Printing/Display)

When asked if business firms and educational organizations were purchasing primarily the same types of machines, the sales representatives responded as follows: Five of the representatives, Ashland Office Supply, Inc., Burroughs

Corporation, Peter Paul Service, Monroe Calculator Company, and Standard Business Machines, said that they did find that businesses and educational organizations were purchasing the same types of machines. Again, as in the previous question, two of these five businesses also indicated the types of machines being purchased are printing electronic calculators.

Machines Recommended by Sales Representatives. The sales representatives were asked what types of machines they recommend to customers over other types of machines. Their responses are reported in Table 7.

Table 7

Machines Recommended by Sales  
Representatives in Selected Cities

Company Represented	Machines Recommended
<u>Ashland Area</u>	
Ashland Office Supply, Inc.	Electronic Calculator (Printing)
Kopp Office Supply, Inc.	None
<u>Covington Area</u>	
Burroughs Corporation	Electronic Calculator
Peter Paul Service	None
<u>Lexington Area</u>	
Monroe Calculator Company	Electronic Calculator (Printing)
Standard Business Machines	Electronic Calculator (Printing)

Table 7 indicates that four, or 67 percent, of the representatives recommended electronic calculators over mechanical machines. Fifty percent recommended printing electronics over display models. Reasons given for recommending this particular type of machine were: (1) Ashland Office Supply, Inc.--customers can use tapes for further checking; (2) Monroe Calculator Company of Lexington--tapes are available to refer to if an error is made; (3) Standard Business Machines of Lexington--tapes are available to check entries because there is no way to check or verify with the display models. The representative of Kopp Office Supply in Ashland reported that he explains the uses, advantages, and features of each machine and lets each customer decide what he needs for his particular situation. The representative of Peter Paul Service in Covington noted that he recommends no particular machine. He stated that he first determines the customer's needs and then makes recommendations based on those needs.

Future Office Machine Trends. In reference to future office machine trends, the representatives were asked if they felt that business firms and educational organizations should begin phasing out older machines so that they could convert to all electronic machines in the near future. In response to this question, 83 1/3 percent of the company representatives believed that in the future business firms and educational organizations would be using all electronic machines.



The Kopp Office Supply representative based his response on the fact that electronics are much faster and competition is forcing the prices down. Burroughs Corporation stressed the fact that businesses and schools won't be able to buy mechanical machines much longer as many companies have already limited sales to only electronic machines. The representative of Standard Business Machines stated that he definitely felt that businesses and schools would go to all electronics in the near future. However, in relating the views of a business professor at the University of Kentucky, he pointed out that there is a question about the teaching of basic math. "With electronic machines," he said, "there is no real teaching of basic math. You don't have to really teach a student to divide . . . when all he has to do is depress one button."<sup>24</sup>

One company, Peter Paul Service in Covington, said that businesses and educational organizations would definitely go to all electronics, but the representative pointed out that this would be in the line of calculators and would not affect adding machines.

The reasons given for the one negative response, which represented only 16 2/3 percent of the sample, were (1) electronic machines are too expensive; (2) regular mechanical machines are still too good; and (3) the mechanical machines are less trouble as far as maintenance is concerned.

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<sup>24</sup>Statement by J. L. Baumgardner, personal interview, July 31, 1973.

Sales Percentages. The final question of the interview was concerned with total sales. The representatives were asked to estimate what percent of total sales in terms of number of units sold was made up by each type of machine. Their responses are shown in Table 8.

Table 8

Sales Percentages in Terms of  
Units Sold in Selected Sales Areas

Company	Type of Machine	Percent of Sales
<u>Ashland Area</u>		
Ashland Office Supply, Inc.	Electronic (Printing)	90
	Electronic (Display)	10
Kopp Office Supply, Inc.	Electronic	50
	Mechanical	50
<u>Covington Area</u>		
Burroughs Corporation	Electronic	80
	Mechanical	20
Peter Paul Service	Electronic	40
	Mechanical	60
<u>Lexington Area</u>		
Monroe Calculator Company	Electronic (Printing)	85
	Electronic (Display)	15
Standard Business Machines	Electronic (Printing)	10
	Electronic (Display)	90

As the findings reported in Table 8 indicate, some representatives made a distinction between printing electronic and display (screen) electronics; others did not.

The term mechanical machines was used by some firms to indicate a group made up of any of the following: full-key adding machines, printing calculators, rotary calculators, and ten-key adding machines. As given in Table 8 on the preceding page, four of the six firms reported that greater than 50 percent of the total number of units sold were electronic machines. A total of five out of the six companies had electronic sales which made up at least 50 percent of total machine sales.

Remarks of Sales Representatives. Some additional remarks made by some of the company representatives were as follows:

1. The two factors to be considered when purchasing electronic machines are cost and repair.
2. Students need to be taught business applications--how to prepare payrolls, how to process invoices, etc.
3. A diversity of machines in a classroom hampers the students. All of one type of machine should be used.
4. Customers want to buy old machines because they know how to operate these machines. Teachers are afraid to try to learn to operate electronic machines.
5. Most schools do not know about purchasing machines; and therefore, usually buy the cheaper machines, which places emphasis on quantity rather than quality.

6. The fact that most schools receive federal money and are forced to spend this money within a limited period of time hampers purchases.
7. Teachers, in most cases, do not know how to teach office machines courses. In some cases, they themselves do not know how to operate the machines.
8. Students need to be taught business applications rather than how to operate the machines. They do not necessarily have to understand what they are doing. The employer only cares about the output of the employee.
9. Electronic calculators with no "accumulation" features are worth very little.

### Findings in Terms of Hypotheses

Hypothesis 1 stated that the types of machines used in the Business Calculations course at Morehead State University that are not found in the majority of business offices are the full-key adding machines. The findings in Table 3 indicated that only 44 percent of the companies were using full-key adding machines. Therefore, Hypothesis 1 was retained.

As indicated in Table 3, it was found that only six percent of the businesses were using key-driven calculators. Therefore, Hypothesis 2 that less than 10 percent of the offices would be using key-driven calculators was retained.

Hypothesis 3 stated that fewer than 25 percent of the offices would be using full-key adding machines. Since Table 3 indicated that 44 percent of the businesses were using full-key adding machines, Hypothesis 3 was rejected.

Table 3 showed that electronic calculators, rotary calculators, and ten-key adding machines were being used in

the majority of businesses. Therefore, Hypothesis 4 that electronic calculators would be found in less than 50 percent of the businesses where less than 100 persons were employed in office positions was rejected. Electronic calculators were found in 69 percent of the businesses, all of which had less than 100 office employees.

As reported in Table 5, electronic calculators and ten-key adding machines were listed by a majority of businesses as the types of machines to be considered when making future purchases. Therefore, Hypothesis 5 that less than 50 percent of the firms would consider rotary calculators for future purchases was retained. Only six percent of the firms indicated this.

Hypothesis 6 that the majority of businesses would use machines of the ten-key variety was retained since Table 3 indicated that 100 percent of the businesses returning the questionnaire reported that they were using ten-key machines.

Based on the findings reported in Table 6, Hypothesis 7 that all of the companies selling adding and calculating machines would be selling electronic calculators was retained.

Hypothesis 8, which stated that none of the companies would be selling key-driven calculators or full-key adding machines, was rejected. Table 6 showed that  $16 \frac{2}{3}$  percent of the companies were selling full-key machines.

As reported in Table 8, Hypothesis 9 that the majority of businesses would report that electronic

calculators made up at least 50 percent of sales in terms of number of units sold was retained. A total of five out of six companies had electronic sales which made up at least 50 percent of total machine sales.

## Chapter V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### Summary

The survey was conducted to determine the types of adding and calculating machines being used in business offices in selected areas of Kentucky with implications for improvement of instruction in Business Calculations at Morehead State University.

The findings revealed that most companies require a majority of their office workers to use adding and calculating machines. Electronic calculators, rotary calculators, and ten-key adding machines were being used in a majority of business offices. Electronic calculators were used in 69 percent of the offices, ten-key adding machines were used in 100 percent of the offices, and rotary calculators were used in 56 percent of the offices.

Ten-key adding machines and electronic calculators were the only two types of machines purchased by a majority of business firms when they made their last purchases. It was also indicated that these two types of machines would be considered first by a majority of businesses when making future purchases.

Interviews with representatives of companies selling adding and calculating machines revealed that the purchasing trends of business firms and educational organizations are toward electronic calculators, particularly printing electronics. Three of the six companies interviewed reported that they were selling only electronic machines. Four, or 67 percent, indicated that they recommend electronic calculators over other types of machines. Eighty-three and one-third percent of the representatives felt that businesses and schools would convert to all electronic machines in the near future. Five of the six companies reported that over 50 percent of their total sales came from electronic calculators.

### Conclusions

Based on the findings of this questionnaire study, the following conclusions were reached:

1. Students enrolled in the Business Calculations course at Morehead State University are being given instruction on the full-key adding machine, a machine which should not be used in the Business Calculations course since (1) the majority of businesses reported that these machines are being used less and less and will not be considered for future purchases, and (2) the majority of companies selling adding and calculating machines are no longer selling these machines.

2. The Business Calculations course is not providing enough instruction on such parts as memory banks, square root keys, accumulation keys, percentage keys, and



constant keys. Firms reporting indicated that students should be given more instruction on these particular machine parts.

### Recommendations

Based on the findings of this study, the following recommendations have been made:

1. Schools should purchase more electronic calculators and ten-key adding machines when making future purchases. This is indicated by the fact that most companies interviewed reported that these two types of machines make up the greatest percentage of their total sales.

2. Instruction on full-key adding machines and key-driven calculators should be limited to an acquaintanceship level, except in areas where these machines are still used. Studies suggest that some types of businesses, such as banks, use these machines more extensively.

3. More detailed instruction should be given on electronic calculators. Students should be required to learn all parts--memory banks, constant keys, square root keys, accumulation keys, and percentage keys.

4. Students should be given more instruction on business applications. Specifically, they should be given instruction on how to process payrolls, invoices, purchase orders, and figuring discounts.

5. Schools should make purchases based on the job entry requirements for their geographic areas rather than on prices of machines.

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## BIBLIOGRAPHY

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APPENDIX A

Letter to the Better Business Bureaus  
and  
Chambers of Commerce

Dear Sirs:

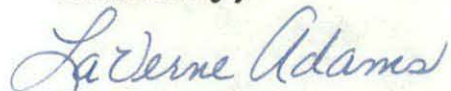
As a graduate student in Business Education at Morehead State University, I am conducting a survey of businesses in selected cities of Kentucky. Your city is one of the three chosen for the survey.

Through this survey, I shall try to determine if the adding and calculating machines used in the Business Calculations course at Morehead State University are of the same type as those used in offices in Kentucky. The information will be used by the Business Education Department at Morehead in evaluating the office machines course in terms of the needs of businesses in your city.

In order to take this survey, I must have a list of the businesses in your city. Would it be possible to obtain this list from you?

Please take a few minutes of your time to send me this list. A stamped, self-addressed envelope is enclosed for your convenience.

Sincerely,



(Mrs.) La Verne Adams

Enclosure

APPENDIX B

SEX COLOR BIRD  
BOARD BIRD  
BIRD BIRD

## FIRMS USED IN QUESTIONNAIRE STUDY

Ashland Area

Ashland Crafts, Incorporated  
Ashland Publishing Company  
Metal Products Company  
National Mine Service Company  
Pennco, Incorporated

Covington Area

Avey Machine Tool Company  
Cincinnati Bell Telephone Company  
Covington Trust & Banking Company  
Donaldson Art Sign Company, Incorporated  
R. A. Jones Company, Incorporated  
Kenton County-Covington Health Department  
Ortner Freight Car Company  
Union Light, Heat & Power Company

Lexington Area

Bank of Commerce & Trust Company  
Bank of Lexington  
Brown & Williamson Tobacco Corporation  
Citizens Union National Bank & Trust  
Columbia Gas of Kentucky  
General Electric Company  
International Business Machines  
Kentucky Utilities Company  
Lexington-Fayette County Health Department  
Lexington Herald-Leader Company  
Lexington Redryers, Incorporated  
Parker Seal Company  
Rainbo Baking Company  
Square D Company  
Trane Company  
Visumatic Industrial Products  
V. R. Wesson Division



APPENDIX C

SECTION 1113  
BUDGET FUND  
Committee

## Cover Letter

Gentlemen:

As a graduate student in Business Education at Morehead State University, I am conducting a survey of selected businesses in Kentucky. Your company is one of the few chosen for the survey.

Through this survey, I shall try to determine if the adding and calculating machines used in the Business Calculations course at Morehead State University are of the same type as those used in offices in Kentucky. The information will be used by the Business Education Department at Morehead in evaluating the office machines course in terms of the needs of business and industry.

The enclosed questionnaire will supply the needed information. It will take only a few minutes of your time to complete. A stamped, self-addressed envelope is enclosed for your convenience.

Please take a few minutes to answer and return the enclosed questionnaire.

Sincerely,

*La Verne Adams*

(Mrs.) La Verne Adams

Enclosures

APPENDIX D

A QUESTIONNAIRE TO DETERMINE THE TYPES OF  
ADDING AND CALCULATING MACHINES USED IN OFFICES  
IN SELECTED AREAS OF KENTUCKY

Please answer the following questions about the types of adding and calculating machines used in your office. Please be sure to answer all of the questions.

1. Name of business \_\_\_\_\_
2. Address of business \_\_\_\_\_
3. Number of office workers employed by your company \_\_\_\_\_
4. Number of office employees whose duties require the use of adding and calculating machines \_\_\_\_\_
5. Please list the number of each type of machine in your office as indicated below:

Electronic Calculator \_\_\_\_\_

Rotary Calculator \_\_\_\_\_

Printing Calculator \_\_\_\_\_

Key-Driven Calculator \_\_\_\_\_

Ten-Key Adding Machine \_\_\_\_\_

Full-Key Adding Machine \_\_\_\_\_

6. Please indicate the total number of each type of machine listed below that was included in your last purchase:

Rotary \_\_\_\_\_

Ten-Key \_\_\_\_\_

Printing \_\_\_\_\_

Full-Key \_\_\_\_\_

Electronic \_\_\_\_\_

Other,  
Specify \_\_\_\_\_

Key-Driven \_\_\_\_\_

7. What was the reason for purchasing this type of machine?

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8. What types of machines will be considered when you make your next purchase?

Electronic	_____	Ten-Key	_____
Rotary	_____	Full-Key	_____
Printing	_____	Other,	
Key-Driven	_____	Specify	_____

9. What is the reason for considering this particular type of machine?

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---

---

10. What recommendations would you make for training students to operate adding and calculating machines?

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APPENDIX E

## Sample Follow-Up Card

Gentlemen:

November 10, 1971

Recently you were mailed a questionnaire concerning the types of adding and calculating machines being used by your office employees. Your cooperation in returning the questionnaire is very important for the successful completion of this study.

Would it be possible for you to complete the questionnaire and place it in the mail by November 15, 1971.

If you have already returned the questionnaire, I wish to thank you for your cooperation.

(Signed)

La Verne Adams

APPENDIX F



## Letter Sent for Interview List

Gentlemen:

As a graduate student in Business Education at Morehead State University, I am conducting a survey of businesses to determine office machine trends in selected areas of Kentucky. Your city is one of the three chosen for the survey.

In completing this study, I need a list of the names and addresses of businesses in your city that sell adding and/or calculating machines. Would it be possible to obtain this list from you?

Your assistance will be greatly appreciated.

Sincerely,



(Mrs.) La Verne Adams

APPENDIX G



223 SCOTT STREET  
COVINGTON, KY. 41011  
Phone 431-0334 (Area Code 606)

914 MONMOUTH STREET  
NEWPORT, KY. 41071  
Phone 261-3091 (Area Code 606)

# NORTHERN KENTUCKY CHAMBER of COMMERCE

July 3, 1973

Mrs. La Verne Adams  
96 Court Square  
Bardstown, Kentucky 40004

Dear Mrs. Adams:

Thank you for yours of the 28th concerning your survey to determine office machine trends. I am afraid your selection of Covington is a bad choice for more than one reason.

Firstly, Covington isn't a "market" in and of itself.....rather, it is part of an array of some 41 cities and towns comprising Northern Kentucky with a total population of 260 thousand persons. It is also part of the SMSA area of Cincinnati, which further complicates the picture.

The various communities in the Cincinnati SMSA have interrelating activity to the point that they must be considered a market with Northern Kentucky being considered a "sub-market".

My suggestion would be that you go to the telephone company of- fice and get a Cincinnati yellowpages to gather the information you need.....it will carry both Cincinnati and Northern Kentucky. NK does have a separate book now, but virtually all of these listings would be in both books.

We appreciate your inquiry and hope these suggestions are of some help.

Sincerely,

Walter Dunlevy  
Executive Vice President

APPENDIX H

## Interview Letter

Gentlemen:

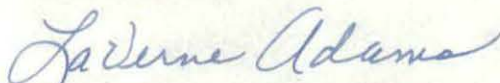
As a graduate student at Morehead State University, I am conducting a survey on office machine trends. In this study I will attempt to determine if the adding and calculating machines used by businesses in selected areas of Kentucky are of the same type as those being used in the Business Calculations course at Morehead State University.

I feel that an interview with one of your experienced sales representatives would add a great deal to the value of this study, especially in the area of types of machines used.

At the convenience of your Sales Department, I would like to set up an interview with one of your sales representatives. Would it be possible to set up an interview appointment for \_\_\_\_\_ on July \_\_\_\_\_?

Your cooperation will be greatly appreciated.

Sincerely,



(Mrs.) La Verne Adams

(Cincinnati Locations)

This interview would be concerned mainly with your sales to businesses in the Covington area.

APPENDIX I

Firms Not Responding to Interview Letter

Ashland Area

Ashland Office Supply, Incorporated

Covington Area

Accounting Machine Corporation  
Waltz Typewriter & Adding Machine Company

Lexington Area

Friden, Inc.

Firms Responding But Not Granting Interviews

Ashland Area

Kopp Office Supply, Incorporated  
Carroll Office Equipment  
Stationer's, Incorporated

Covington Area

Business Machines, Incorporated  
J & L Typewriter Company

APPENDIX J



## COMPANIES INTERVIEWED

Ashland Area

Ashland Office Supply, Incorporated  
Kopp Office Supply, Incorporated

Covington Area

Burroughs Corporation  
Peter Paul Service

Lexington Area

Monroe Calculator Company  
Standard Business Machines

APPENDIX K

## INTERVIEW QUESTIONS

1. What types of new machines does your company sell?
2. Do you as a sales representative sell machines to both business firms and educational organizations?
3. What type(s) of machines do you find customers primarily interested in at the present time?
4. Do you find that business firms and educational organizations are purchasing primarily the same types of machines?
5. What types of machines do you as a sales representative recommend to customers over other types of machines?  
Why do you recommend this particular type of machine?
6. Do you feel that business firms and educational organizations should begin phasing out machines so that they can convert to all electronic machines?
7. Do you feel that in the future business firms and educational organizations will go to all electronic machines?
8. Could you give an estimate of total sales (in terms of number of units sold) made up by each type of machine?

% Electronic  
% Mechanical

APPENDIX L

## DESK

## MACHINES

1	Monroe Printing Calculator
2	Marchant 316 Printing Calculator
3	Marchant Printing Calculator 314
4	Friden Electronic 1114 Calculator
5	Friden Electronic 1114 Calculator
6	Friden Electronic 1114 Calculator
7	Olivetti Underwood Printing Calculator Div 24
8	Olivetti Underwood Printing Calculator Div 24
9	Olivetti Underwood Printing Calculator Div 24
10	Dictaphone Electronic Calculator, 1412
11	Monroe Electronic Calculator, 820
12	Monroe Electronic Calculator, 990
13	Olympia Printing Calculator
14	Victor Printing Calculator, 73-85-54
15	Victor Printing Calculator, 79-88-54
16	Marchant Printing Electronic Calculator, 616
17	Monroe Printing Electronic Calculator, 1220
18	Victor Electronic Calculator, 1800-1441
19	Friden Rotary Calculator, STW-10
20	Friden Rotary Calculator, STW-10
21	Friden Rotary Calculator, STW-10
22	Olympia Printing Electronic CP400
23	Olympia Printing Electronic CP400
24	Olympia Printing Electronic CP400
25	Monroe Rotary Calculator 6F162
26	Monroe Rotary Calculator CSAE-10
27	Monroe Rotary Calculator CSAE-10
28	Victor 17-83-54
29	Victor 17-85-54
30	Victor Ten-Key, 17-85-54
31	Marchant Rotary DRX
32	Marchant Rotary ADX
33	Marchant Rotary 8 CM
34	Friden Ten-Key, 211
35	Monroe Ten-Key, 150
36	Olivetti Underwood Ten-Key, 23
37	Monroe Full-Key
38	Monroe Full-Key
39	Monroe Full-Key
40	Burroughs Full-Key
41	Burroughs Full-Key
42	Burroughs Ten-Key
Back Table	Monroe Full-Key
Back Table	Monroe Full-Key
Back Table	Monroe Full-Key
Back Table	Burroughs Full-Key
Back Table	Burroughs Full-Key
Back Table	Monroe Ten-Key
Back Table	Monroe Rotary, CSA-8