

PRACTICES AND PERCEPTIONS OF COMPUTER  
USAGE IN ACCOUNTING CURRICULUM

By

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## CHAPTER 1

### INTRODUCTION

According to D'Onofrio (1983), the United States has experienced development periods in her history known as the agricultural age and the industrial age. The present period of development is often referred to as the information age. Since the source of power in this age is information, the accumulating and retrieval of that information is of importance. Cunitz (1972) wrote that this has led to the use of computers in all areas of business and industry. In recent years, computers have the capability of someday replacing the manual bookkeeping functions.

According to Brown (1980, p. 16), "this infiltration of the computer into the business world has had a dynamic effect on traditional accounting methods." Basic accounting theory has remained the same, but the method of using the information has changed dramatically over the past several years (Cook, 1983). Accounting students need to possess a knowledge of electronic data processing and computer capabilities (Cunitz, 1972). Although most of this knowledge can be acquired through specific computer courses, the student needs to experience how accounting fundamentals are applied to the computer. This can be accomplished by introducing the accounting student to computer usage in the accounting curriculum. The need to learn accounting principles and procedures is still necessary but the student learns that the computer is a tool to be used to make his work easier. Computers should be

used to improve student knowledge of accounting material already learned, not as a substitute to learning such material (Cunitz, 1972).

The computer has been used to fulfill the fundamental objectives of accounting which are "to provide information for decision making and ensure proper control of business operations" (Bhaskar, 1982, p.3). Some examples of computer application in accounting are preparation of financial statements, long-range projections, budgeting, cash flow projections, payroll, inventory control, accounts receivable and payable control, stock portfolios, and compliance with wage price guidelines in industry.

According to Fess (1981), before the use of computers, accounting information was limited to only the fundamental transactions because of the time required to do all the work by hand. But now, vast amounts of accounting data can be collected and transformed rapidly into meaningful reports. The accountant has progressed from the recorder of the information to the interpreter of the accounting reports as they aid management decisions. The computer has now become the recorder.

According to D'Onofrio (1983, p. 19) "educational institutions are working towards integrating computer technology into their classes to facilitate the preparation of students to work in this information age." Demand for computer instruction in the accounting classroom is a logical response to the needs of industry (Stubbe, 1982). Based on readings and contacts, some educational institutions are beginning to realize a need for computer literacy. They are incorporating computers into their accounting curriculum as additional teaching aids in the form of tutorial aid or "hands-on" experience with the computer (D'Onofiro, 1983).

### Statement of Problem

A study has not been conducted in order to identify how computers are being used in the accounting curriculum at colleges and universities in Oklahoma. Also, information is not available in order to identify practices and perceptions of accounting firms and industry towards the use of computers in accounting.

### Purpose of the Study

The purpose of this study was to determine the practices and perceptions of accounting educators, accounting firms and industry accounting departments toward computer usage in accounting.

### Research Questions

The study sought to answer the following questions:

1. How many colleges and universities in Oklahoma are using computers in their accounting curriculum?
2. What computer usage is being included in the accounting curriculum at colleges and universities in Oklahoma?
3. What are the practices and perceptions of accounting firms toward computer usage in accounting?
4. What are the practices and perceptions of accounting departments in industry toward computer usage in accounting.
5. What are the practices and perceptions of accounting firms and accounting departments in industry toward how much computer knowledge is necessary?

### Assumptions

Some of the assumptions of this study were:

1. The primary goal of accounting classes remains to teach accounting principles and theory.
2. To function in the information age, some form of computer literacy is necessary.

### Limitations

This study was limited to three groups surveyed: accounting departments at colleges and universities in Oklahoma, selected accounting firms in Oklahoma City from a listing from the Oklahoma Board of Public Accountancy, and selected representatives from accounting departments of industry in Oklahoma City.

### Definitions

The following terms were used in this study:

Accountant - A person who works in the field of accounting whether for an accounting firm or industry.

Accounting Curriculum - Courses offered by an institution of higher education in the area of accounting.

Computer - An electronic device capable of accepting data, performing arithmetic or decision type processes on it, and making the answer available.

Computer Assisted Instruction (CAI) - Computer software used to assist the student in learning.

Industry - Accounting department representatives.

Minicomputer - A stored-program computer which falls into a small computer category based on price, main memory size, and variety of functional capabilities.

Microcomputer - A computer with each major section--central processing unit (CPU), control, timing, and memory--contained on a single miniature circuit board, usually a single large-scale integration (LSI) chip; a class of small, very low-cost computer systems using single-chip and LSI technology.

Users - Accounting firms and industry that use computers for accounting purposes.

Visicalc - A powerful versatile software tool available for a number of popular computer systems. It can create an electronic spreadsheet by using formulas and built in functions.

### Organization of the Study

This study was organized into five chapters. Chapter I included the introduction, specific statement of the problem, purpose of the study, research questions, assumptions, limitations and definitions. Chapter II contained the review of literature. The specific methods and procedures used in conducting the study were described in Chapter III. Chapter IV contained the statistical analysis and interpretations of data. The summary of the study, conclusions and recommendations were reported in Chapter V.

## CHAPTER II

### REVIEW OF LITERATURE

The purpose of this study was to determine the perceptions of accounting educators, accounting firms and industry towards computer usage in accounting.

A review of literature was made in the following three areas: the computer and accounting education, accounting firms and industry, and educational institutions.

#### The Computer and Accounting Education

Beginning in 1957, the American Accounting Association (AAA) made committee reports concerning the use of electronic data processing (EDP) as part of the teaching instruction. The essence of a few of the committee reports is presented in this section.

The second AAA Committee report (1963) emphasized teaching students how to operate input and output devices rather than the operation of specific EDP machines. The committee concluded that an understanding of the characteristics and functions of electronic devices was necessary for the development of accounting students. Emphasis should be placed on input devices, processing units, or output devices rather than on how the machines operate.

The third AAA Committee report (1964) was concerned with the courses and curricula which should be part of the accounting student's

education. The committee concluded its report with the following recommendations:

At the undergraduate level, accounting students should be exposed to electronic data processing in three stages. The first stage would involve the student receiving instruction in basic programming prior to the introductory accounting course. Stage two would incorporate the student's accounting knowledge into problem solving by using the computer. The third stage is for the computer to act as an additional teaching aid in the traditional accounting courses.

The committee felt that the computer should be used as a problem-solving tool, as an element in accounting information system and a basis for a more logical approach to analysis of business transactions. The student would still receive the traditional training with the computer becoming a natural part of his education. The committee especially encouraged the use of the computer as an instructional and research tool.

The fourth AAA Committee report (1964) was concerned with the practical uses of the digital computer in accounting education. The committee was assigned the task of determining the role the computer should play in accounting education.

The committee determined that the computer was not an end in itself, but rather a tool that the accountant should use in aiding management decisions. Therefore, there was a need for instruction about the computer for all accounting students as . . .

1. a user of information that has been processed on the computer
2. a user of pre-written canned programs for analysis

3. a specifier of processes and operations that are to be carried out using the computer
4. an auditor who must evaluate the processes and results of computer data processing (p. 34).

The committee suggested that the elementary accounting courses introduce the student to computers with accounting related materials. They also suggested that one or more other courses in the accounting curriculum should cover this material in more depth.

One way that the committee suggested implementing the computer was through instructional cases (problems, practice sets, and etc.). Also, the committee felt that problem solving and analytical techniques were both desirable and feasible.

The committee devoted a section of its report to the fact that computers were being used as aids to instruction in accounting. They suggested the computer be used to record transactions or instructions by the students. The results of the AAA Committee reports indicated that students needed to know how computers were used to aid in decision making.

#### Accounting Firms and Industry

In a computerized accounting system, a difference does not exist between the application of theory, only in the mechanical aspect of the bookkeeping process. The underlying accounting principles are the same although the record and reports generated by the computerized system may look different than those of a manual system (Jancuar, 1983).

According to Skousen (1981, p. 59) "because of their speed and accuracy, computers have significantly reduced the accountants' clerical workload." This reduction in the clerical area has "alleviated

the doing and expanded the thinking" of accountants (Rachlin, 1981, p. 34).

Computers have been programmed to reveal certain comparisons and trends and to predict the outcome of decision alternatives for business and industry. Therefore, the computer has become a powerful tool for decision making. The accountant who has had computer training is in a better position to assist management in interpreting information and making decisions (Jancura, 1983).

According to Arnold (1978), the computer has influenced public accounting more than any other single aspect in years. Over 40 percent of local firms have computer orientation, and these firms regard the future of the computer as an audit tool. This fact also suggests that accountants with strong computer backgrounds may have an advantage over those who do not. A need exists for accountants to have at least a working knowledge of the computer in order to function in public accounting.

Computer application for clients and internal use by the accounting firms has been quite diverse. Areas of use have included payroll, word processing, client write-ups and financial statement presentation, financial planning, modeling and worksheet analysis, and tax planning and preparation (Wynne, 1981).

The most popular worksheet analysis program has been Visicalc (Wynne, 1981). This program has been used by Arthur Anderson, one of the Big Eight accounting firms in the United States. Simms (1983) of that firm said that spread sheet applications have made microcomputers easy to use and popular. He said that their Dallas, Texas, office began operating several years ago with one microcomputer; now they have 10.

Computers have become a valuable tool to the management decision aspect of accounting. The firm exposes all of their new accounting personnel to a two day introductory course in Visacalc. According to Simms (1983), it would be beneficial if graduates in accounting could be exposed to microcomputers throughout their college accounting courses.

Business and industry users of computers consisted of almost every business and industry in the United States in 1982 (Sheldon, 1982). Sheldon, in 1982, projected that more than 500,000 small business computers would be sold by 1985.

The most common use for small computers has been in accounting application. The primary accounting functions that have been computerized are billings, accounts receivable and payable, sales analysis, client write-up and preparation of financial statements, payroll, and inventory control (Sheldon, 1982). "In manufacturing firms, materials flow and scheduling problems are solved by computer systems" (Cook, 1983, p. 7). Other activities that are generated and controlled by the computer have included cost accounting, financial planning, profit projections, cash flow, tax planning, and many others.

The increase in microcomputers has been enhanced by their reduction in cost and their multiple usage aspect (Wynne, 1981). But the industry has become disenchanted with today's college graduates and would like colleges to provide people who can develop computer applications in areas that aid managers in making better and more timely decisions, provide the information to assist controlling present operations, and aid in forecasting and planning for the future (Gallagher, 1978). Industry is wanting more than a theory knowledge of accounting. The need exists for a working knowledge of accounting along with its

application through the use of computers (American Accounting Association, 1964).

### Educational Institutions

Educational institutions have been using computers as all purpose tools to facilitate learning (Watt, 1982). They have used computers to help teach students from the handicapped to the gifted (International Business Machines, 1979).

In elementary schools, computers have been used to provide the basis for learning subject areas such as mathematics, spelling and music (Wyatt, 1982). Computer-based practices and drills have allowed the student to learn more at a faster rate (Davis, 1980).

In high schools, instructors have been utilizing computers more in teaching their subjects (Stubbe, 1982). Instructors have been trying to keep more students interested in learning and to do that they have been using the computer (Cook, 1983). The main reason for teaching data processing in high school accounting classes has been to increase the employment possibility of the students (Stubbe, 1980). Stubbe and Weaver (1980) said that infusing a small amount of data processing information into an accounting course was a more successful way of introducing new concepts.

One high school in Modesto, California, that gradually integrated computer application into its accounting classes was Thomas Downey High School. The accounting advisory committee of that school felt the accounting instruction had not kept pace with the changes in accounting theory brought on by the wider use of computers in business.

Brown (1980) related that students readily and eagerly accepted the dual teaching approach of traditional method with the additional application of the computer. The conclusion that Brown (1980) reached was that the accounting classroom was the appropriate place to introduce computers, since computers were so universally accepted in business. In reference to the success of the program, Brown (1980, p. 18) stated, "students who had lost interest in school began to see a purpose in education; others who had not planned to continue their education went on to college."

Emphasis needs to be placed on increasing computer-related instruction into the classroom (Stubbe and Weaver, 1980). Only 10 percent of all the nation's computers are used for mathematics and science-related application with 90 percent being put to business application (Oklahoma State Department of Education, 1983). To better prepare tomorrow's employees for a computerized society, "accounting teachers need to infuse data processing knowledge into the classroom" (Stubbe and Weaver, 1980, p. 27).

The postsecondary schools have kept pace with the increasing demand for computer knowledge. More than ever before, schools have been purchasing microcomputers for classroom use (Davis, 1980).

Strippolli (1980) stated that postsecondary institutions have an obligation not only to provide a good program, but to make it relevant to the world in which the student must work and compete. Strippolli (1983), therefore, believes that computers should be introduced into the accounting curriculum.

D'Onofrio (1983) stated that using microcomputers in the accounting classroom has expanded the student's awareness of computers. The

students have been given the opportunity to get hands-on experience with a computerized accounting system, to compare computer application to manual accounting procedures, to obtain a necessary understanding of the accounting flow, and to increase their understanding of microcomputer technology.

Wolverton (1982) listed several applications of microcomputers in accounting education. They included problem solving, decision making, automated accounting functions, learning new accounting concepts, reinforcing concepts already learned, developing independent learning skills, and drill and practice.

According to Bhaskar (1982), computers should be incorporated in accounting curricula through computer science courses, computer-assisted instruction (CAI), and computational exercises. CAI has freed the instructor from the routine teaching duties and allowed him to spend greater amounts of time with individual students on more difficult areas of instruction. Using the computer as a computational tool has promoted the application of accounting principles and procedures. The computer has helped in defining and solving problems, and interpreting the results of solutions. An approach to using the computer as a computational tool is through the use of Visacalc.

A survey of schools who were members of the American Assembly of Collegiate Schools of Business concluded that there was only a limited integration of the computer into accounting courses. The study pointed out that the professional accounting bodies recommended inclusion of computers into the programs (Carter et al., 1981). Another study by Cook (1983, p. 34) showed that accounting curricula had not incorporated computer usage into classwork "although there was a need for such based

on the extensive use of computers in accounting related tasks in industry and business." The results of the survey indicated that "computers should be used in the accounting curricula and that its use would be of benefit to prospective employees when applying for accounting related positions" (Cook, 1983, p. 34).

### Summary

The impact of computers has changed the teaching environment, the profession of accounting, and the management decisions of industry (Babcock, 1979). Educational institutions have been guilty of not keeping pace with business and industry in upgrading their computer usage (Stubbe, 1982). The review of literature indicated that people believed the computer was here to stay. Strippoli (1980) stated that educational institutions needed to update their programs and techniques if the students were to receive training and knowledge that would benefit them in this computerized society.

Based on the literature review, more people were needing technological training than ever before. This has placed a responsibility on educational institutions to provide a curriculum that would be conducive to that need. The literature reviewed indicated that the accounting classroom was the best place to train the accounting professional in computer usage. In order to achieve this proper training, the curriculum of educational institutions needs to be changed in response to the needs of industry (Stubbe, 1982).

## CHAPTER III

### METHODOLOGY

The purpose of this study was to determine the practices and perceptions of accounting educators, accounting firms, and industry toward computer usage in accounting. To achieve the purpose of this study, two emphases were addressed: accounting educators, and accounting firms and industry. This chapter contained the following sections: (1) selection of subjects, (2) instruments, (3) collection of data, and (4) analysis of data.

#### Selection of Subjects

One emphasis of this study was to determine which colleges and universities in Oklahoma used computers in their accounting curriculum and how they were being implemented into the program. The source used to compile a list of colleges and universities in Oklahoma was Education Directory-Colleges and Universities (1981-82). A total of 41 colleges and universities in Oklahoma were identified.

The second emphasis consisted of two groups. One was accounting firms in Oklahoma City, the other, industry in Oklahoma City. The accounting firm's source was a listing from the Oklahoma Board of Public Accountancy. A total of 60 firms were identified. The industry source used was Computer Directories, Inc. for Oklahoma (1982). A total of 175 companies were listed. Of these 175 companies that used some type

of computer software, 80 companies were selected that had software with either a business or accounting application.

### Instruments

Two questionnaires were utilized to obtain information from study participants. One questionnaire was designed to determine how many colleges and universities in Oklahoma were using computers in their accounting curriculum as an additional teaching aid. Also, the questionnaire attempted to gather data about what types of computer programs were being used and in which accounting courses. It attempted to determine why computers were not being used in the accounting curriculum. And finally, it sought to determine if schools were anticipating using computers in the accounting curriculum within the next year or two. The researcher designed the questionnaire and it was tested by accounting educators from colleges and universities. Corrections were made to the questionnaire based upon suggestions by the experts. See Appendix A for a copy of the questionnaire.

The second questionnaire was developed to determine if accounting firms and industry considered it necessary to have a knowledge of how accounting is used through computer application. It also attempted to determine in what areas the accounting department used computers. And finally, it attempted to determine the perceptions of accounting firms and industry towards how much computer knowledge is necessary and in which courses computers should be utilized as a teaching aid. The researcher designed the questionnaire and it was tested by accountants from accounting firms and industry. Corrections were made based upon suggestions of the experts. See Appendix B for a copy of the questionnaire.

One cover letter was written for accounting educators (See Appendix C). A second cover letter was developed for accounting firms and industry (See Appendix D). The two letters were written on letter-head stationary explaining the purpose and importance of the questionnaires in an attempt to improve the credibility of the questionnaires. The letters and questionnaires were addressed to the department heads of the accounting departments, accounting firm partners and accounting departments of the industries.

#### Collection of Data

The cover letter and questionnaires were mailed to all groups during the fourth week in January, 1984. If the responses to the questionnaires were not received by February 10, 1984, a follow-up letter was sent. A copy of the follow-up letter appears in Appendix E. All letters and questionnaires were accompanied by pre-addressed, return envelopes. A decision was made to discontinue any further mailings after the second request.

#### Analysis of Data

The data was tabulated for frequency count. Percentages were then tabulated.

## CHAPTER IV

### ANALYSIS OF QUESTIONNAIRES

The purpose of this study was to determine the perceptions of accounting educators, accounting firms, and industry towards computer usage in accounting. This chapter contained the following sections: response rate, college and university usage, accounting firm and industry usage, comparison of college and university accounting firm and industry responses and summary.

#### Response Rate

The response rate to the questionnaires on computer usage in accounting is presented in Table I. Colleges and universities responded at a rate of 46.34 percent. Accounting firms' response rate was 38.71 percent. Industry responded at a 45.57 percent rate.

#### Colleges and Universities

Responses to the questions concerning "what type(s) of accounting program(s) do you offer?" and "do you presently use computers in the accounting curriculum as an additional teaching aid?" are presented in Table II. Schools offering a one-year certificate reported no use of computers in the accounting curriculum. Sixty percent of the two-year associated degree programs had incorporated computers into their

TABLE I  
RESPONSE RATE TO QUESTIONNAIRES

Areas	Number Sent	First Mailing	Second Mailing	Total Returned	
	N	N	N	N	%
Colleges and Universities	41	15	4	19	46.34
Accounting Firms	62	20	4	24	38.71
Industry	79	29	7	36	45.57

TABLE II  
USE OF COMPUTERS BY TYPE OF PROGRAM

Program	Computer Use			
	Yes		No	
	N*	%	N*	%
One-year certificate	0	00	2	100.00
Two-year associate degree	3	60.00	2	40.00
Bachelors degree	5	41.67	7	58.33
Accounting for general education	1	100.00	-	-
Two-year certificate	1	100.00	-	-
Masters degree	1	100.00	-	-

\*Numbers may indicate more than one response per person.

accounting programs. Programs offering a bachelors degree used computers in 41.67 percent of the cases.

Responses to the question concerning "which of the computer programs are you utilizing as a teaching aid?" are presented in Table III. Nine of the 19 respondents to the questionnaires indicated they used the computer as a teaching aid. Nine of the respondents used computers for computerized practice sets and five respondents used Visicalc as a teaching aid. Six of the respondents did not use computer assisted instruction.

Responses to the question "what is the estimated number of students in accounting programs?" are presented in Table IV. Ten of the respondents indicated they had between 0 to 50 students enrolled in their accounting curriculum. Six of the respondents had an enrollment of between 101 to 200 students.

Responses to the questions "what are the reason(s) you do not use computers in the accounting curriculum?" and "if you do not presently use computers, are you considering a change within the next two years?" are presented in Table V. Of the 19 respondents, 10 of the schools did not use computers. Lack of funds to buy software had the largest percentage of yes responses (80%). Also, respondents indicated that students received training in other courses, so they did not use computers in the accounting curriculum (70%). The respondents indicated that a lack of interest and a lack of importance were not reasons for not using computers (100%). All 10 of the schools are planning to incorporate computer usage into their accounting curriculum within two years.

TABLE III  
AREAS OF COMPUTER USAGE IN ACCOUNTING CURRICULUM

Computer Programs	Yes N*	No N*
Computerized practice set	6	3
Computer assisted instruction	3	6
A simulated business game	2	7
Visicalc	5	4
Statistical Analysis system	1	—
Investment financial planning	1	—
Touche Ross audit sampling	1	—

\*Numbers may indicate more than one response per person.

TABLE IV  
NUMBER OF STUDENTS ENROLLED BY TYPE OF PROGRAM

Program	Students			
	0-50 N	51-100 N	101-299 N	300-1000 N
One-year certificate	2	0	0	0
Two-year associates degree	3	0	2	0
Bachelors degree	3	0	4	3
Accounting for general education	1	0	0	0
Two-year certificate	1	0	0	0
Masters degree	0	1	0	0

\*Numbers may indicate more than one response because some schools have more than one program.

TABLE V  
REASONS COMPUTERS ARE NOT USED IN THE ACCOUNTING  
CURRICULUM AND PROJECTED USE

Reasons Computers Not Used	Yes		No	
	N	%	N	%
Students receive training in other courses	7	70.00	3	30.00
Lack of interest	0	00.00	10	100.00
Lack of importance	0	00.00	10	100.00
Lack of adequate equipment	6	60.00	4	40.00
Lack of funds to buy software	8	80.00	2	20.00
Lack of trained personnel	4	40.00	6	60.00
Lack of time in classroom	4	40.00	6	60.00
Lack of preparation time	2	20.00	8	80.00
Computer use within two years	10	100.00	0	00.00

### Accounting Firms and Industry Usage

Responses to the questions "how many accountants and/or bookkeepers do the accounting firms and industry employ?" and "how many accounting graduates do you hire each year?" are presented in Table VI. Sixty percent of the respondents employed between one to 10 accountants and/or bookkeepers. Seventy percent of the accounting firms and industry hire one to four college graduates each year.

Responses to the questions "how important do you think computers are to the accounting field?" and "how important will computers be to the accounting field in the near future?" are presented in Table VII. All of the respondents from the accounting firms indicated that computers are of great importance currently and in the future. Industry response indicated that 86.11 percent viewed computers of great importance currently while 94.44 percent viewed computers of great importance in the future.

Responses to the question "do you presently use some type of computerized accounting?" is represented in Table VIII. The respondents from accounting firms and industry indicated a 100 percent usage of computerized accounting. Since all of the respondents were using computers, there were no responses to Questions 7 and 8 of the survey.

Responses to the question "in which areas of accounting is the computer utilized?" are presented in Table IX. The total respondents used the computer for payroll (95%), billings (93.33%), accounts receivable and payable (88.33%), write-up work (88.33%), and preparation of financial statements (83.33%). Twenty-two accounting firms or 91.67 percent, indicated that they used the computer for tax planning

TABLE VI  
NUMBER OF ACCOUNTANTS/BOOKKEEPERS EMPLOYED  
AND NUMBER OF GRADUATES HIRED EACH YEAR

Numbers	<u>Accounting Firm</u>		<u>Industry</u>	
	N	%	N	%
Currently employed				
1-10	12	50.00	24	66.67
11-25	3	12.50	6	16.67
26-65	7	29.17	6	16.67
100-134	2	8.33	0	00.00
Graduates Hired Each Year				
0	2	8.33	10	27.78
1-4	16	66.67	26	72.22
5-10	3	12.50	0	00.00
15-30	3	12.50	0	00.00

TABLE VII  
PERCEIVED IMPORTANCE OF COMPUTERS BY USERS

Importance	Accounting Firms				Industry			
	Yes		No		Yes		No	
	N	%	N	%	N	%	N	%
<u>Current Importance</u>								
Of great importance	24	100.00	0	00.00	31	86.11	5	13.99
Fairly importance	0	00.00	24	100.00	5	13.89	31	86.11
Of little importance	0	00.00	24	100.00	0	00.00	35	100.00
Not important at all	0	00.00	24	100.00	0	00.00	35	100.00
<u>Future Importance</u>								
Of great importance	24	100.00	0	100.00	34	94.44	2	5.56
Fairly important	0	00.00	24	100.00	2	5.56	34	94.44
Of little importance	0	00.00	24	100.00	0	00.00	36	100.00
Not important at all	0	00.00	24	100.00	0	00.00	36	100.00

TABLE VIII  
USAGE OF COMPUTERIZED ACCOUNTING

Question	Accounting Firms				Industry			
	Yes		No		Yes		No	
	N	%	N	%	N	%	N	%
Computerized accounting usage	24	100.00	0	00.00	36	100.00	0	00.00

TABLE IX  
AREAS OF COMPUTER UTILIZATION BY USERS

Areas	Accounting Firms				Industry				Total			
	Yes		No		Yes		No		Yes		No	
	N*	%	N*	%	N*	%	N*	%	N*	%	N*	%
Payroll	22	91.67	2	9.33	35	97.22	1	2.78	57	95.00	3	5.00
Inventory Control	6	25.00	18	75.00	22	61.11	14	38.89	28	41.67	32	53.33
Billings	23	95.83	1	4.17	33	92.66	3	8.34	56	93.33	4	6.67
Accounts receivable and payable	21	87.50	5	26.50	34	94.44	2	5.56	53	88.33	7	11.67
	21	87.50	5	26.50	34	94.44	2	5.56	53	88.33	7	11.67
Sales analysis	14	58.23	10	41.77	24	66.66	12	13.34	38	63.33	22	36.67
Write-up work	23	96.83	1	3.17	30	83.33	6	16.67	53	88.33	7	11.67
Preparation of financial state	22	91.67	2	8.33	28	77.77	8	22.23	50	83.33	10	16.67
Cash flow projections	15	62.50	9	37.50	13	36.11	23	63.89	28	46.67	32	53.33
Tax planning and preparation	22	91.67	2	8.33	12	33.33	24	66.67	34	56.67	26	43.33
Long range planning	13	54.17	11	45.83	13	36.11	23	63.89	26	43.33	34	56.67
Profit projections	14	58.23	10	41.77	15	42.66	21	58.54	29	48.33	31	51.67
Budgeting	--	-	--	-	1	2.7	--	-	1	3.00	--	-
Fund Raising	--	-	--	-	1	2.7	--	-	1	3.00	--	-
Fixed Assets	--	-	--	-	1	2.7	--	-	1	3.00	--	-

\*Numbers may indicate more than one response per person.

and preparation. Twenty-two industry firms, or 61.11 percent, indicated that they used the computer for inventory control.

Responses to the questions about "should the accounting graduates have a workable knowledge of how the computer can be used as a decision making tool in business?" and "how much knowledge is necessary for your accounting personnel?" are presented in Table X. All of the respondents from accounting firms and industry indicated the accounting graduate needed a workable knowledge of how the computer can be used as a decision making tool in business. Fourteen of the accounting firms, or 79.17 percent, indicated the accounting graduate should be able to assimilate information from the computer into business projections and decisions. Nineteen of the accounting firms indicated a workable knowledge of computer programming was not necessary.

Twenty-six of the industries, or 72.22 percent, indicated that a need for familiarity with bookkeeping skills was necessary for the accounting graduate. The table indicated that 30 of the respondents of industry did not consider a workable knowledge of computer programming as a necessary skill for accounting graduates.

#### Comparison of Responses of Three Groups

Responses to the question "in which areas of accounting is or should the computer be utilized?" is presented in Table XI. Six of the respondents from colleges and universities, or 66.67 percent indicated they used computers in Accounting I and II. No colleges and universities were utilizing computers in Advanced Accounting I and II, or Income Tax. Thirteen of the accounting firms indicated that computers should be used in Cost Accounting; 14 indicated use in Advanced

TABLE X  
KNOWLEDGE NEEDED BY ACCOUNTING GRADUATES

Need	<u>Accounting Firms</u>				<u>Industry</u>			
	<u>Yes</u>		<u>No</u>		<u>Yes</u>		<u>No</u>	
	N	%	N	%	N	%	N	%
<u>Question</u>								
Workable knowledge of computer use as a decision making tool	24	100.00	0	0.00	36	100.00	0	0.00
<u>Areas of Need</u>								
Workable knowledge of computer programming	5	20.83	19	79.17	6	16.67	30	83.33
Familiarity with bookkeeping skills	14	58.33	10	41.67	26	72.22	10	27.78
Ability to assimilate information from the computer into business projections and decisions	19	79.17	5	20.83	24	66.67	12	33.33
Not necessary	0	00.00	24	100.00	0	00.00	36	100.00

TABLE XI  
COMPARISON OF COMPUTER USAGE IN ACCOUNTING CURRICULUM

Curriculum	Are Utilized				Should Be Utilized							
	Schools				Accounting Firms				Industry			
	Yes		No		Yes		No		Yes		Yes	
	N	%	N	%	N	%	N	%	N	%	N	%
Principles I	6	66.67	3	33.33	9	37.50	15	62.50	10	27.78	26	72.22
Principles II	6	66.67	3	33.33	10	41.67	14	58.33	15	41.67	20	58.33
Intermediate I	1	11.11	8	88.89	8	33.33	16	66.67	18	50.00	18	50.00
Intermediate II	1	11.11	8	88.89	8	33.33	16	66.67	22	61.11	14	38.89
Cost Accounting	1	11.11	8	88.89	13	54.17	11	45.83	22	61.11	14	38.89
Advanced Cost	1	11.11	8	88.89	9	37.50	15	62.50	27	75.00	9	25.00
Advanced Accounting I	0	0.00	9	100.00	9	37.50	15	62.50	25	69.44	11	30.56
Advanced Accounting II	0	0.00	9	100.00	14	58.33	10	41.67	20	69.44	11	30.56
Auditing	1	11.11	8	88.89	14	58.33	10	41.67	20	55.56	16	44.44
Personal Income Tax	0	0.00	9	100.00	15	62.50	9	37.50	20	55.56	16	44.44
Accounting Systems	3	33.33	6	66.67	--	-	--	-	--	-	--	-
Managerial Accounting	1	11.11	8	88.89	--	-	--	-	--	-	--	-
Graduate Financial	1	11.11	8	88.89	--	-	--	-	--	-	--	-

\*Numbers may indicate more than one response per person.

Accounting II and Auditing; and, 15 indicated use in Income Tax. Twenty-seven of the respondents from industry indicated the computer should be utilized in Advanced Cost and 25 indicated use in Advanced Accounting I and II.

Several of the respondents gave additional comments on the questionnaires. Those comments are presented in Appendix F.

### Summary

The total responses by colleges and universities in Oklahoma to the questionnaires was 19 out of 41 for a 46.34 percent return. Of the 19 returned, nine schools were utilizing computers in their accounting curriculum and the remaining 10 expected to implement computers into their curriculum within the next two years. Computers were being utilized in 60 percent of schools offering a two-year associates degree in accounting and in 41.67 percent of the schools offering a bachelor's degree. Computers were being utilized for a computerized practice set by 66.67 percent of the respondents. The computer was being used for a simulated game by 22.33 percent of the respondents and computer assisted instruction was only used by 33.33 percent of the respondents.

Total responses by accounting firms were 24 out of 62 for a 38.71 percent response rate. Industry responded to 36 out of 79 questionnaires for a response rate of 45.57 percent. All of the respondents used computers in their accounting work. Accounting firms and industry indicated that computer usage in accounting was of great importance currently and for the future. All of the accounting firms and industry indicated that it was important for an accounting graduate to have a knowledge of how computers could be used for decision making.

Accounting firms indicated that the ability to assimilate information from computers into business projects and decisions was most important. Industry indicated a familiarity with bookkeeping skills as an area of need for the accounting graduate. Colleges and universities utilized the computer in Accounting I and II (66.67%). Accounting firms and industry indicated computers should be utilized in Cost Accounting, Advanced Accounting I and II, Auditing, and Income Tax.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR PRACTICE AND RESEARCH

The first section of Chapter V is a brief summary of the study. The remaining two sections contain the conclusions and recommendations.

#### Summary

The purpose of this study was to determine the practices and perceptions of accounting educators, accounting firms and industry accounting departments toward computer usage in accounting. To achieve the purpose of this study, two emphases were addressed: accounting educators and accounting firms and industry.

Two questionnaires were utilized to obtain information from the study participants. One questionnaire was designed to determine how many colleges and universities in Oklahoma were using the computers in their accounting curriculum, what types of computer programs were being utilized and in which accounting courses computers were used. A total of 41 colleges and universities were identified.

The second questionnaire was designed for accounting firms and industry participants. It attempted to determine practices and perceptions of accounting firms and industry towards computer usage in accounting, and their perceptions of how much computer knowledge is needed. A total of 62 accounting firms and 79 industries were

identified for the study.

The questionnaires were sent to the participants and the results were tabulated. The statistical methods used to analyze the data were frequency count and percentages.

### Conclusions

The conclusions of this study are as follows:

1. Not all of the schools are utilizing computers in their accounting curriculum but all of them are expecting to use computers within two years.
2. Of the colleges and universities that use computers, most of the schools use computers in Accounting I and II for computerized practice sets.
3. All of the respondents from the accounting firms utilized computers in their businesses. The accounting firms indicated that computers should be utilized in the more advanced accounting classes. Several of the respondents said that the computer is not to replace the theory knowledge the accounting student needs, but the computer is to enhance that knowledge by allowing the accountant to progress from a recorder of information to an analyzer of information.
4. All of the industry respondents indicated they used computers in their accounting departments. Industry indicated that computers should be utilized in the more advanced accounting classes.
5. All of the respondents from accounting firms and industry said the accounting graduate needed a knowledge of how the computer could be used as a decision making tool. Most of the accounting firms indicated graduates needed the ability to assimilate information from the computer

into business projections and decisions. Industry indicated a need for the graduate to be familiar with basic bookkeeping skills. Both accounting firms and industry indicated a working knowledge of computer programming was not necessary for the accounting graduate.

### Recommendations for Practice

Based on the findings in this study, the following recommendations for practice were made in regard to computer usage in accounting curriculum:

1. Educators should begin to realize and acknowledge the fact that computers are needed in the accounting curriculum. Not only for a specific area such as the bookkeeping function, but also for other areas such as analysis and decision making.

2. The computer should not be limited to computerized practice sets. Other avenues of use should be investigated such as computer assisted instruction and some type of data analysis decision making.

3. Educators should incorporate the computer into the more advanced accounting courses.

4. One major problem affecting schools is the lack of funds to buy software. Therefore, money should be budgeted for the purpose of buying software.

5. Accounting educators need to work more closely with accounting firms and industry in order to identify areas of need. The accounting graduate needs to acquire basic skills and abilities in order to function in the workplace and if education does not meet those needs, then the workplace must do so.

### Recommendation for Research

Based on the findings in this study, the following recommendations for further research were made:

1. Further research should be performed on accounting graduates who have had accounting courses with computers to see how well they perform in the workplace compared to students who have not had computer usage in their accounting curriculum.

2. Further research should be performed in the area of computer assisted instruction and the effect it has on students ability to learn accounting.

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## APPENDIXES

## APPENDIX A

### QUESTIONNAIRE FOR COLLEGES AND UNIVERSITIES

Directions: Please respond to the following questions.

	<u>YES</u>	<u>NO</u>
1. What type(s) of accounting program(s) do you offer? (Check all that apply.)		
One year certificate . . . . .	___	___
Two year associate degree . . . . .	___	___
Bachelor's degree . . . . .	___	___
Other (specify) _____		
2. What is the estimated number of accounting students enrolled in the following programs?		
One year certificate _____		
Two year associate degree _____		
Bachelor's degree _____		
Other _____		
3. Do you presently use computers in the accounting curriculum as an additional teaching aid?	___	___
4. If you use computers as an additional teaching aid, which of the following computer programs are you utilizing? (Check all that apply.)		
Computerized practice sets . . . . .	___	___
Computer Assisted Instruction (CAI) . . . . .	___	___
A simulated business game . . . . .	___	___
VisiCalc . . . . .	___	___
Other (specify) . . . . .		
5. In which of the following courses are computers being utilized?		
Principles of Accounting I . . . . .	___	___
Principles of Accounting II . . . . .	___	___
Intermediate I . . . . .	___	___
Intermediate II . . . . .	___	___
Cost Accounting . . . . .	___	___
Advanced Cost Accounting . . . . .	___	___
Advanced Accounting I . . . . .	___	___
Advanced Accounting II . . . . .	___	___
Auditing . . . . .	___	___
Personal Income Tax . . . . .	___	___
Accounting Systems . . . . .	___	___
Other (specify) _____		

YES      NO

6. What are the reason(s) you do not use a computer in the accounting curriculum? (Check all that apply.)

Students receive computer training in other courses.	_____	_____
Lack of interest . . . . .	_____	_____
Lack of importance . . . . .	_____	_____
Lack of adequate equipment . . . . .	_____	_____
Lack of funds to buy software . . . . .	_____	_____
Lack of properly trained personnel . . . . .	_____	_____
Lack of time in the classroom . . . . .	_____	_____
Lack of preparation time . . . . .	_____	_____
Other (specify) _____		
_____		
_____		

7. If you are not utilizing the computer in the accounting curriculum, are you considering such a change within the next year or two?

\_\_\_\_\_

8. Any additional comments? \_\_\_\_\_

\_\_\_\_\_

## APPENDIX B

### QUESTIONNAIRE FOR ACCOUNTING FIRMS AND INDUSTRY

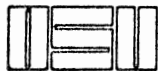
Directions: Please respond to the following questions:

	<u>YES</u>	<u>NO</u>
1. How do you view accounting?		
As the main business activity . . . . .	___	___
As a department of the business. . . . .	___	___
2. How many accountants and/or bookkeepers do you employ? _____		
3. Estimated number of college graduates (two or four year degrees) you hire each year? _____		
4. Presently, how important do you think computers are to the accounting field?		
Of great importance . . . . .	___	___
Fairly important . . . . .	___	___
Of little importance . . . . .	___	___
Not important at all . . . . .	___	___
5. How important will computers be to the accounting field in the near future?		
Of great importance . . . . .	___	___
Fairly important . . . . .	___	___
Of little importance . . . . .	___	___
Not important at all . . . . .	___	___
6. Do you presently use some type of computerized accounting?	___	___
7. If no, are you considering such a change within the next year or two?	___	___
8. Reason(s) you <u>do not</u> use a computer in the accounting area (check all that apply):		
Lack of interest . . . . .	___	___
Lack of importance . . . . .	___	___
Lack of adequate equipment. . . . .	___	___
Lack of funds to buy software . . . . .	___	___
Lack of trained personnel . . . . .	___	___
Other (specify) _____		

	<u>YES</u>	<u>NO</u>
9. In what areas of accounting is the computer utilized? (Check all that apply)		
Payroll . . . . .	_____	_____
Inventory control . . . . .	_____	_____
Billings . . . . .	_____	_____
Accounts receivable and payable . . . . .	_____	_____
Sales Analysis . . . . .	_____	_____
Write up work (general ledger) . . . . .	_____	_____
Preparation of financial statements. . . . .	_____	_____
Cash flow projections . . . . .	_____	_____
Tax planning and preparation . . . . .	_____	_____
Long-range planning . . . . .	_____	_____
Profit projections . . . . .	_____	_____
Other (specify) . . . . .	_____	_____
<hr/>		
10. In which accounting course(s) should the computer be used as a teaching aid (check all that apply):		
Principles of Accounting I . . . . .	_____	_____
Principles of Accounting II . . . . .	_____	_____
Intermediate I . . . . .	_____	_____
Intermediate II . . . . .	_____	_____
Cost Accounting . . . . .	_____	_____
Advanced Cost Accounting . . . . .	_____	_____
Advanced Accounting II . . . . .	_____	_____
Auditing . . . . .	_____	_____
Personal Income Tax . . . . .	_____	_____
Accounting Systems . . . . .	_____	_____
Other (Specify) _____	_____	_____
<hr/>		
11. Should accounting graduates have a working knowledge of how the computer can be used as a decision making tool in business?	_____	_____
12. How much computer knowledge is necessary for your accounting personnel?		
A workable knowledge of computer programming . . . . .	_____	_____
Familiarity with basic bookkeeping skills . . . . .	_____	_____
Ability to assimilate information from the computer into business projections and decisions . . . . .	_____	_____
Not necessary . . . . .	_____	_____
13. Any additional comments? _____		
_____		
_____		

APPENDIX C

COVER LETTER FOR THE QUESTIONNAIRE FOR  
COLLEGES AND UNIVERSITIES



*Oklahoma State University*

January 11, 1984

THE TECHNICAL INSTITUTE  
900 North Portland  
Oklahoma City, OK 73107  
947-4421, Area Code 405

Dear Participant:

You have been selected to participate in a study that will be helpful to accounting education during the upcoming "high technology" age. As a representative of a school actively concerned with development of educational excellence for the mutual benefit of industry and society, your opinion is highly regarded.

With your demonstrated interest in education, you are among the best qualified people to decide if computers need to be used in the accounting classroom and at what level or in what areas they need to be utilized.

Please respond to the survey by February 10, 1984. Your prompt response will assure your opinions will have maximum impact on the study. Thank you for your cooperation.

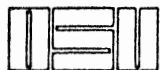
Sincerely,

Anna Hamilton  
Accounting Instructor  
Computer Programming/Accounting Department

Enclosures: 2

APPENDIX D

COVER LETTER FOR THE QUESTIONNAIRE FOR  
ACCOUNTING FIRMS AND INDUSTRY



*Oklahoma State University*

January 27, 1984

THE TECHNICAL INSTITUTE  
900 North Portland  
Oklahoma City, OK 73107  
947-4421, Area Code 405

Dear Participant:

You have been selected to participate in a study that will be helpful to accounting education during the upcoming "high technology" age. As a representative of a successful company actively concerned with development of educational excellence for the mutual benefit of industry and society, your opinion is highly regarded.

With your demonstrated interest in education, you are among the best qualified people to decide if computers need to be used in the accounting classroom and at what level or in what areas they need to be utilized.

Please respond to the survey by February 10, 1984. Your prompt response will assure your opinions will have maximum impact on the study. Thank you for your cooperation.

Sincerely,

Anna Hamilton  
Accounting Instructor  
Computer Programming/Accounting Department

Enclosures: 2

APPENDIX E

FOLLOW-UP LETTER FOR THE QUESTIONNAIRE

Dear :

A few weeks ago you received a questionnaire from Oklahoma State University Technical Institute dealing with Computer Usage in Accounting. If you have not responded to the questionnaire, please take the time to do so. We need more data in order to make a valid study. Your cooperation is appreciated.

Sincerely,

Anna Hamilton  
Accounting Instructor

## APPENDIX F

### ADDITIONAL COMMENTS MADE BY THE RESPONDENTS

### Colleges and Universities

"We recognize the need to make some computer applications and are moving in that direction. I do think there is a possibility of over-emphasizing the computer in accounting courses to the detriment of accounting knowledge."

"We do not use as much as we should due to budgeting restraints."

### Accounting Firms

"Basic 'comfort' in working with computers is essential."

"If a company does not have an in-house programmer, it would be necessary for the accounting people to have a broader knowledge of computer programming, so they would know when they have a reasonable request for a programming service."

### Industry

"Explain to your students that after they graduate, they begin the second phase of their learning experience."

"If a student understands the basics of a manual system, they can easily apply that to the computer system. First the student must thoroughly understand the basics. Then the computer becomes a tool for their use."

VITA 2

Anna Faye Hamilton

Candidate for the Degree of  
Master of Science

Thesis: PRACTICES AND PERCEPTIONS OF NEEDED COMPUTER USAGE IN  
ACCOUNTING CURRICULUM

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in McAlester, Oklahoma, August 7, 1955, the  
daughter of Harold L. and A. Armenda Trammell.

Education: Graduated from Will Rogers High School, Tulsa,  
Oklahoma, in May, 1973; received a Bachelor of Science degree  
in Business Administration from Bethany Nazarene College in  
May, 1977; completed requirements for the Master of Science  
degree with a major in Occupational and Adult Education at  
Oklahoma State University, Stillwater, Oklahoma in May, 1984.

Professional Experience: Accountant, Galen Taylor, CPA, Oklahoma  
City, Oklahoma, 1978-81; Adjunct Faculty, Computer Program-  
ming/Accounting Department, Oklahoma State University  
Technical Institute, Oklahoma City, Oklahoma, 1981-82; Instruc-  
tor, Computer Programming/Accounting, Oklahoma State Technical  
Institute, 1982-84.

Professional Organizations: Member of Oklahoma Technical Society,  
Higher Education Alumni Council.