STATUS AND TRENDS OF INFORMATION SYSTEMS PROGRAMS IN ACCREDITED COLLEGIATE SCHOOLS OF BUSINESS

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THE RESEARCH PROBLEM

Introduction

Computer technology, one of the most important developments society has experienced, has affected the life of almost every existing human. Marketed only three decades ago, the electronic computer has had a tremendous impact on society with virtually every aspect of business now utilizing the computer in some fashion.

The first business computer was sold commercially to the United States Census Bureau in 1951. This computer was a very unsophisticated machine by today's standards. According to Bauman (1981), it cost approximately one million dollars, covered 1,500 square feet, contained 18,000 vacuum tubes, weighed thirty tons, and required a thirty-ton air conditioner unit to keep it from burning itself up with the heat generated during its operation. By 1956, the number of computers in commercial use had increased to an estimated 600. By 1970, there were about 90,000 in use and it is estimated that 500,000 computers were used by educators, business and industry, and private individuals in the United States during 1980.

Decreasing in size and cost, computers have now become feasible tools for utilization in small businesses, educational institutions, and even homes. As technology advances rapidly and the cost of hardware and

power decreases, information processing education will continue to experience phenomenal growth.

Review of the literature by Canning (1980) indicates that the demand for information processing personnel is now at an all-time high, and growing rapidly. It is forecast that there will be 1.1 million people employed in U.S. data processing occupations by 1985. Thus, the demand for qualified information processing professionals now exceeds the supply. Important issues are now facing the information systems profession including a critical shortage of personnel. Action must be taken to address this problem related to the continued growth and progress of the information systems area.

Undergraduate programs with the goal of preparing students for commercial computer information systems environments are defined in this study as Information Systems programs. According to the Data Processing Management Association Education Foundation Model Curriculum (1981), Computer Information Systems is an emerging academic discipline with goals, subject matter, and problem solving processes sufficiently different from other computer-related disciplines to warrant special considerations. Computer Information Systems is primarily concerned with the application of the system development life cycle to business-oriented, computer based information systems. As such, its subject matter involves the study of systems analysis, systems design, and computer programming, along with other technical, business, and general studies areas pertinent to the development and implementation of information systems in a variety of operational and administrative settings. The curriculum promotes the value of technical/business competency for entry-level success and for career growth and development.

Wilson (1981) contends that it is the generally accepted goal of most business schools to produce graduates who are familiar with the computer, its related technology, and information systems as they apply to the business environment; however, it is also recognized that attaining this goal may be a monumental task.

Modern technology has made possible the educational revolution that we are now witnessing, as the information systems community continually asks for more and better qualified personnel. The phenomenal development of computer technology has created a growing demand for competent information processing personnel, thereby creating large enrollments in the information systems area. These enrollments are putting information systems instructors in a position of great responsibility and strength. Therefore, it is imperative that educators in the information systems area continually evaluate and re-evaluate their curriculum offerings in Computer Information Systems to stay abreast of changing demands.

Statement of the Problem

The purpose of this study was to provide information stating the extent to which American Assembly of Collegiate Schools of Business (AACSB) accredited business programs offer a degree in the information systems area, the courses offered in this degree, an in-depth study of the introductory or core course in information processing, and faculty status and trends in the information systems area. This was accomplished by an interpretative analysis of data obtained from questionnaires to be mailed to all of the 214 AACSB-accredited domestic educational institutions.

Specifically, the study revealed:

1. The extent to which AACSB accredited business programs offer a degree in information systems.

2. Courses offered by AACSB business colleges in the information systems area.

3. An in-depth study of the introductory information processing course including the following: course titles, programming language(s) taught, approximate enrollment, textbooks used, the approximate percentage of time devoted to selected topics, and other relevant information.

4. Faculty status and trends in the information systems area.

In accomplishing the above objectives, the study revealed the uniformity or diversification in the various universities. Institutions with programs which differ greatly from prevelant practices may wish to take the opportunity to re-examine their curriculum.

Need for the Study

As technology develops and computer utilization becomes an integral part of our lives, business educators must change to meet the demands of business. To meet the challenge, a serious look must be taken at the current curriculum offerings in the information systems area. According to Data Processing Management Association's executive committee on model curriculum development (1980), there is a need to develop a nationally recognized and accepted curriculum for information systems degree programs. Don Price (1980), president of the DPMA Education Foundation, states that criticism continues from all sectors that people educated in computer sciences dominated curricula are not prepared for business information systems work. Price also feels that educational institutions must standardize their naming of programs and courses so that business knows what is being taught.

Tesch (1979) agrees, stating that effective standards for entry-level data processors need to be determined.

One major objective of the introductory information processing course should be to prepare students for more advanced levels of computer related coursework required of graduates. Therefore, it is vitally important that course content is included to provide students with a solid foundation. This instruction is also made available as an elective to students who desire an introductory course as part of their general preparation. According to Graziano and Gruenor (1979), 32 percent of all colleges predict this course to be a school requirement within the next three to five years. Therefore, it seems that a need exists for an in-depth study of the introductory information processing course.

Only when knowledge is made available of the current status and trends of information systems programs can recommendations be made. This study will analyze, interpret, and report the present status and trends of information systems programs in AACSB-accredited educational institutions.

Limitations of the Study

This study is limited to a survey of AACSB-accredited domestic educational institutions. There are 214 public and private domestic educational institutions accredited by the American Assembly of Collegiate Schools of Business.

This study may be limited because the sample, drawn from the AACSB membership directory, does not directly represent educational institutions not accredited by AACSB, nor does it represent international educational institutions. Certain implications and generalizations of the study should

be considered in relation to any influence resulting from this restriction in the sample.

Definition of Terms

To clarify the interpretation of data, the following terms are defined as used in this study:

The American Assembly of Collegiate Schools of Business (AACSB)--A not-for-profit corporation of educational institutions, corporations, and other organizations devoted to the promotions and improvement of higher education in business administration and management. Organized in 1916, AACSB is recognized as the sole accrediting agency specifically for baccalaureate and masters degree programs in business administration by the U.S. Department of Education and by the Council on Postsecondary Accreditation.

Beginner's All-purpose Symbolic Instruction Code (BASIC)--A procedure-level computer language that is well-suited for time-sharing. BASIC, developed at Dartmouth College, is probably one of the least difficult computer programming languages to learn and master. These attributes have allowed BASIC to be instrumental in the spread of time-sharing to businesses that are not within the computer industry.

Common Business Oriented Language (COBOL)--This is a common procedural language designed for commercial data processing as developed and defined by a national committee of computer manufacturers and users. A specific language by which business-data processing procedure may be precisely described in a standard form. The language is intended not only as a means for directly presenting any business program to any suitable computer for which a compiler exists, but also as a means of communicating such procedures among individuals.

Computer--A device capable of accepting information, applying prescribed processes to the information, and supplying the results of these processes. It usually consists of input and output devices, storage, arithmetic, and logical units, and a control unit.

Data Processing--Also referred to as Information Processing. The preparation of source media which contain data or basic elements of information, and handling of such data according to precise rules of procedure to accomplish such operations as classifying, sorting, calculating, summarizing, and recording.

FORTRAN--A programming system, including a language and a processor (compiler) allowing programs to be written in a mathematical-type language. FORmula TRANslator. A data-processing language that closely resembles mathematical language.

Information Systems--The network of all communication methods within an organization derived from a data processing unit or computer. The name used for a degree program in data processing in the school of business.

Input--Information or data transferred or to be transferred from an external storage medium or external source into the internal storage of the computer.

Introductory Course--The computer-related course which often satisfies the core course requirements set by the American Assembly of Collegiate Schools of Business (AACSB).

Output--Computer results, such as answers to mathematical problems, statistical, analytical or accounting figures, production schedules, etc.

Pascal--A programming language developed and named after French mathematician Blaise Pascal. Pascal was developed for educational purposes to teach programming concepts to students.

Programming Language One (PL/1)--This language has some features that are characteristics of FORTRAN and incorporates some of the best features of other languages, such as string manipulation, data structures, and extensive editing capabilities. Further, it has features not currently available in any language.

Programming Language--A specific language used to prepare computer programs.

Report Program Generator (RPG)-The report program generator provides a convenient programming method for producing a wide variety of reports. The generator may range from a listing of a card deck or magnetic-tape reel to precisely arranged, calculated, and edited tabulation of data from several input sources.

CHAPTER II

REVIEW OF RELATED LITERATURE

This study concerns the current status and trends of information systems programs in AACSB-accredited collegiate schools of business. The related research and literature was surveyed with the following purposes in mind: (1) the impact that computer technology has had on educational institutions, business and industry, and the lives of persons functioning in each of these areas, (2) the demand for information systems programs and qualified personnel in this area, and (3) curriculum implications in information systems programs.

Societal Impact of Computer Technology

Silver and Silver (1981) report that electronic computers are now used in virtually every aspect of business, science, service, and leisure. Few inventions have had such a major impact on society in such a short period of time. Data processing/information processing is one of the most rapidly expanding facets of the modern business world.

According to Roberts (1978), experts in the field of data processing forecast continued expansion in computer use and further advances in computer technology. These two developments will bring about hundreds of additional computer-related jobs. Roberts feels that this is still the infancy of computer technology and that there are many new developments yet to come. These developments will have a major impact on manpower

required to effectively use the capabilities of computer systems over the next several years and will necessitate better educated personnel.

Karten (1979) stated that a survey conducted by Dave Benjamin indicated several of the nation's leading business schools are either requiring or encouraging their students to develop a knowledge of Data Processing.

Musselman and Smith (1979) feel that students in today's classes need to know and understand that much of the information they will handle in business will ultimately find its way to a computer for processing.

Miller (1980) contends that non-DPers fail to realize that they need Data Processing skills. Their ranks include managers, deans, trustees, presidents, and legislators. The "new illiterates" hold positions of authority, yet are unaware that their expertise has been eroded by a changing technology. He feels that there is more than an altruistic reason to devote time and energy toward eliminating this new illiteracy.

Barr (1980) agrees with Miller, stating that computer literacy has become a necessity for everyone involved in education.

Brightman (1970) contends that every student pursuing a business-related program of study should have some exposure to the computer and the resultant social and economic impact of its widespread utilization. According to Nord (1980), the trend toward increased computer usage is projected to continue through future decades. The impact of low-cost computer systems with the pretransaction figure constantly spiralling downward will add further emphasis to the information processing explosion.

Bauman (1980) agrees with Nord, stating that information systems technology has progressed at a phenomenal rate so far, and by all reports is about to make another giant leap.

Mandell (1979) feels that computer systems are an important part of our society, stating that applications in fields such as education, health care, law enforcement, and entertainment have significantly influenced the way we live.

Grossman and Howe (1965) state that the entire world is demanding more and more information in order to make intelligent decisions. The informational demands come not only from big business, industry, or government; they are being made by all who are caught up in the complexities of modern decision-making.

Shelly and Cashman (1980) contend that society as a whole and the data processing industry in particular face a challenging and exciting future. The problem of using computer power for beneficial purposes must be addressed and solved as the entire world becomes affected by the marvel of the twentieth century.

Demand for Information Systems Programs

According to Silver and Silver (1981), computer-related occupations are currently among the fastest growing professions in the world.

Canning (1980) reports that the demand for data processing personnel is now at an all-time high, and growing rapidly. According to the U.S. Bureau of Labor Statistics, in 1974 there were approximately 853,000 people employed in U.S. data processing occupations, 742,000 of them in user organizations. It is forecast that there will be approximately 1.1 million people so employed in the U.S. by 1985.

> Around the world the demand for data processing professionals now outstrips the supply, and prospects for the future are not encouraging. Forecasters say that companies will have a harder and harder time finding qualified computing professionals (Canning, 1980, p. 1).

Nord (1980) explains that data processing is a diverse field which offers a wide-range of computer-related occupations that continually employ more and more people.

Cook, Gallagher, and Johnston (1979) feel that for some time there has been a significant difference between the type of graduate that is being produced in colleges and universities and the type of graduate that industry wants and needs. Industry would like to see academia provide them with the people who can apply the computer in areas that will aid managers in making better and more timely decisions, provide the information to help them control present operations, and aid them in forecasting and planning for future growth. However, industry has become disillusioned in that universities are not producing qualified graduates who can do this job.

Cook, Gallagher, and Johnston (1979) state that business-oriented computer science programs are extremely scarce. Yet industry wants business training for the graduates they hire.

No longer the "silent majority," business DP and information systems educators are telling employers as well as curriculum planners that there are and should be significant differences between "pure" computer science/engineering and business information systems (Athey, 1979).

Business Data Processing/Information Systems graduates are usually associated with the end user rather than the hardware manufacturer. According to Athey (1979), the business DP/IS graduate is usually responsible for the design and development of user-oriented computer programs. Graduates of this program usually enter the workplace as applications

programmers or programmer/analysts. This degree program should be housed in the School of Business.

Miller (1979) agrees with Athey stating that business data processing/information systems produce graduates which usually are associated with the end user, rather than the manufacturer of computers. This graduate is responsible for the design and development of programs and usually enters the market as a programmer or programmer/analyst. Miller also feels that the degree program should be in the School of Business.

Nord (1978) states that the most obvious underlying characteristic is simply that business data processing is business oriented and computer science is scientific oriented.

Price (1980) states that many colleges and universities are "turning out" graduates of computer science who are not adequately prepared for practical application of their knowledge at the business workplace. Industry is not demanding that academia change, but, rather complaining about the problem and then providing the necessary training to re-educate the graduates of computer science courses.

According to Price (1980), the problem often generates from the fact that business people, in general, do not realize that there is quite a difference between the terms computer science, information systems and data processing; the types of problems solved; the manner in which they are solved; and even the languages used are different.

So, an example of what happens is that a recruiter for a company will go to a campus and interview candidates from a computer science curriculum for employment as business programmers. Not only do these

candidates lack coursework in business, but most have never written a line of COBOL or been introduced to data base management concepts.

Schultz (1979) states that there are nearly five Computer Science departments for every Information Systems department in the United States. Nevertheless, the nation has a much higher demand for personnel such as IS graduates, who have a combination of technical and organizational skills, than for computer science graduates with "solely" technical skills.

A study by Davis (1979) revealed that the number of schools offering information systems programs is increasing. The programs range from a few courses (say 2 to 4) up to a significant set of courses (say 5 to 10) which make up a major or concentration.

Cougar (1973) indicates that the growth in size and complexity of computer-based systems necessitates more depth of knowledge on the part of the system design team if improved performance of the system is to be achieved. Users and practitioners alike need a broader understanding of both the managerial process and the technology in computerizing managerial systems.

Entry-level personnel for the information systems field may be properly prepared through an undergraduate education. With experience and advanced education, the individual can make a significant contribution to the system design processes.

Hunter (1980) reinforces these thoughts by suggesting that computer science and business information systems should be separate, with the school of business recognizing the industry's need for a business information systems degree and trying to make the resources available to offer such a degree.

Are educators in colleges of business taking action to meet the requirements to establish information systems degree programs?

According to Cerullo (1981), approximately 60 schools of business, accredited by the American Assembly of Collegiate Schools of Business (AACSB), now offer an information systems degree program. Many other schools are planning to implement such a program. In addition, the author's examination of AACSB catalogs reveal that, while many schools do not offer full-fledged information systems curricula, they offer multiple systems courses.

Bangs and Hillestad (1970) believe that the need for training young people for living and working in a computerized world is with us.

> The electronic computer industry is moving ahead so rapidly that it needs many more trained people than are now working in it. This condition will exist far into the future, making the industry very attractive for those who want to find careers in it. Moreover, the salaries for some of the occupations in this field rank among the highest offered in business (Wanous, Wagner, and Hallman, 1979).

The growing demand for qualified data processing/information processing personnel has raised employment and salary standards, therefore, placing information systems educators in a position of great responsibility and strength.

Information Systems Curriculum Implications

Review of the literature by Strippoli (1980) indicates that educational institutions at the post-secondary level have an obligation to provide not only an intense program of study but also one that is relevant to the world that the student will enter upon graduation. It is

therefore important that the computer--so widely used in the business world--be introduced into the school curriculum.

The introductory information processing course, often a required or core course, is offered at many educational institutions. This course should be designed so that an emphasis is placed on the social and economic impact of the widespread utilization of computers. Only when students are made aware of the importance and impact of computer information systems will interest be stimulated and steps taken to acquire additional education in this area. The following studies reinforce the idea for needed research in this area:

According to Graziano and Gruener (1979), when planning a first course in computers, administrators and instructors are faced with a number of problems; a heterogeneous mix of students, the inability to identify majors in the first course, the frustration of having to choose between offering computer concepts versus programming language constructs or an integrated mix of both, and staffing the service courses to account for large enrollments. The result of this planning is usually a variety of courses offered by various departments sometimes in the same school. In many cases these courses overlap in course content.

Feeney, Lane, and Spaulding (1978) conducted a survey of the introductory data processing course in the School of Business at San Diego State University. It is the only computer course which a large number of business undergraduates are required to take. In addition, it is the recruiting ground for Information Systems Department majors. Four problems existed with the introductory course: (1) There was only tentative agreement on general areas of course content and no standard outline was used in all sections of the course. (2) There was no clearing house for

exchanging materials used the course. (3) There was little quality control across the various sections of the course. (4) No procedure existed to insure that any beneficial changes made to the course would be continued in following years.

Solutions to these problems need to be given serious consideration by schools of business across the nation.

Kroenke (1980) describes business computer systems in terms of five dimensions: hardware, programs, data, procedures, and personnel. Each of these dimensions should be included in an introductory class to provide balance and realism. Students need to be taught through a realistic approach so they understand the rationale of the problem. This may be accomplished through simulation of a real life situation. Students should be exposed to as much as the real world as possible involving decisions about real-life problems.

In preparing a student for graduation--a student's education should consist of a familiarization with theories and techniques, integrated with an opportunity to apply these theories and techniques to realistic business applications (Martin, Spence, and Guynes, 1981).

Hodge (1977) also recommends a "live case" approach to information systems education--involving DP managers and staff in actual, working environment situations--overcoming shortcomings of the more traditional case and lecture methods.

Students see at first hand the work environment to which they will be exposed as employees. All of the stages of problem definition, analysis and solution design involve contact with people.

According to Hodge (1977), separating the campus world from the real world of the operational data center can only produce DPers innocent of realtime business happenings.

According to Haga (1967), data processing/information processing should be conceived as only one of the major functions of an information system which is dependent upon people, materials, procedures, and information, as well as machines.

Cerullo (1980) feels that the present approach to integrate computers into the undergraduate business curriculum leaves much to be desired.

Are educators taking steps to eliminate these problems?

Flaumenhaft (1977) reports that business schools are increasingly introducing programs in communications, public and private institutional management, computer science, finance, and data processing. What is being witnessed is undoubtedly the reflection of business students' desire to acquire marketable skills.

According to Miller (1979), during a recent conference, workshop discussion groups arrived at three basic program elements for courses in business information systems. First, they noted that the farther along the development scale, the more important it becomes for a computer professional to understand how business functions. Courses in accounting, marketing, finance, management, economics, quantitative analysis, and business law were identified as being "very valuable" for persons seeking jobs as programmers, programmer/analysts and systems analysts.

Second, they agreed that because many majors in business information systems begin work after graduation as programmers, it's extremely important that students be provided with strong fundamentals in at least one programming language, that it should be COBOL, and that structured programming concepts and techniques should be stressed.

Third, the group recognized that "most college graduates today have very poor communication skills, both oral and written," but said this is a weakness that has been apparent for many years. The group said a major in business information systems should include courses in speech, written communications, technical writing, report writing, business communications as well as psychology or human behavior.

Brightman (1970) states that coursework will, naturally, be influenced by the degree to which data processing has alrady been applied in firms in the employer community. The curriculum should reflect employers' plans for introducing data processing in the future, as well as graduates' occupational and geographic mobility. Brightman also feels that the major direction for all data processing courses should come from specialists and computer curriculum planners. This should not preclude, however, the involvement of accountants, social scientists, engineers, and others. To the extent that they are qualified, non-data processing faculty should participate in computer education in their respective areas. Not only will this involvement better assure a reserve of personnel to handle related courses, it will facilitate integration of subject matter.

A survey conducted by Spence (1981) revealed that the business and academic communities generally agree on the knowledge base for business school graduates, however, there are sufficient differences to warrant continual assessment and appraisal by the academic community for students to stay abreast of changing demands.

Cannon (1980) feels that educators need to have a knowledge of what is being used in the business world, along with the necessary skills and knowledge of the personnel involved.

Strippoli (1980) stresses the fact that faculty members should examine the available resources in the library and keep up to date with new developments in the field. He further indicates that it is the obligation of educators to ensure that students are prepared for a technologically advanced society and, even more important that they are intellectually prepared to contribute to it.

Behling (1979) contends that there is not agreement on a "best" curriculum, however, most agree that a career in data processing requires a broad range of skills beyond mastery of the technical programming skills. He feels that we should constantly evaluate our curriculum keeping in mind that data processing crosses many functional boundaries.

Review of the literature by Rhodes (1980) revealed that no one has yet developed "any" standards for what a good business Data Processing curriculum should entail.

Educational institutions must standardize their naming of programs and courses so that business knows what is being taught.

Review of the literature by Nord (1978) indicates that the most common names used for data processing in the school of business are information systems and operations research, information systems, management information systems (MIS), management science, business data processing, and administrative services. The term information systems will be used in this study.

According to Dershem (1979), the courses in a data processing curriculum emphasize business application and often include instruction in operations, unit-record equipment, and data center management.

A survey of businesses by Galloway (1979) indicated that COBOL, RPG, and Assembler were the most widely used programming languages, with COBOL

being the primary language of almost 60 percent of the respondents. Currently the most widely used programming language for business, COBOL's major advantage is its close resemblance to English. According to Galloway (1979), a basic intent of the four-year program is to prepare students for employment in business and government organizations as business application programmers and systems analysts.

It is evident that curriculum must be offered to provide students with the necessary knowledge and skills. However, there is much disagreement and few standards concerning what courses should be included in a good computer information systems program.

DPMA and the DPMA Education Foundation recognized the need for a model curriculum in information systems and began to develop one in 1979. The curriculum is now developed and ready for implementation.

According to Jones (1980), the computer information systems program developed by DPMA is intended for an academic home in the business school.

DPMA's executive committee on model curriculum development is composed of: Chairman--Dr. Thomas H. Athey, who is chairman, school of business administration and information systems consultant, California State Polytechnic University, Pomona, CA; members--Don Price, CDP, president of the DPMA Education Foundation and DPMA International liaison; Dr. Jerry Wagner, acting associate dean, school of business administration, California State Polytechnic University, Pomona, CA; Dr. David Adams, associate professor, information systems department, Arkansas State University, AR; and Dr. James Stallard, director of professional development, General Dynamics COMM & Credit Corp., St. Louis, MO (Price, 1980, p. 35).

In developing the model curriculum, this committee identified existing computer programs in colleges and universities as well as identifying industry's real needs.

Beeler (1980) states that the model curriculum consists of ten core courses, including one introductory course and three each in the areas of programming, systems and advanced business computing. Within each course, the standard also specifies the topics to be covered and the Data Processing skills to be stressed.

The core of the recommended curriculum consists of seven courses--four lower-division (freshman/sophomore) and three upper-division (junior/senior) courses: Introduction to Computer-based Systems (lower division), Applications Program Development I-COBOL (lower division), Applications Program Development II-COBOL (lower division), Systems Analysis Methods (lower division), Structured Systems Analysis and Design (upper division), Database Program Development (upper division), and Applied Software Development Project (upper division).

Eight business support courses are recommended, including: Financial Accounting Principles, Managerial Accounting Principles, Principles of Management, Principles of Marketing, Principles of Finance, Production and Operations Management, Quantitative Methods in Business, and Organizational Behavior.

In addition to the above core or required courses, electives are available from which three courses must be chosen. A total of ten courses are required giving 30-semester hours of coursework in the computer information systems curriculum.

The curriculum promotes the value of technical/business competency for entry-level success and for career growth and development.

Beeler (1980) explains that the proposed core courses would serve a two-fold purpose. On one hand, they would introduce some much-needed uniformity to the U.S. business computing education by providing a set of basic guidelines to which all undergraduate information systems curricula would conform. But within those guidelines, each university or community college would still be free to tailor its course offerings to its individual academic requirements.

Will colleges and universities meet the demands by implementing and utilizing a model curriculum in information systems?

> It must be emphasized that we are involved in a growth industry. The increasing sophistication of the information processing community is continually asking for more and better trained personnel (Pair, 1975, p. 19).

It is evident that in the information systems area, educators must offer curriculum to provide students with the necessary knowledge and skills needed to function properly in the world of computer information systems. The future of business information systems education depends on how well the use of computer-based office technology is integrated into the overall program and how well students are prepared to work in that environment.

Wisdom and information are a powerful team. Computers can provide the information; educators must provide the wisdom (Goodlad, O'Toole, and Tyler, 1966).

Summary and Critique

A thorough review of the related research and literature revealed a need for innovation--innovation in curriculum offered by educational institutions in information systems, innovation in the structure of

existing courses, and innovation in the theories, techniques and approaches used by educators in the information systems area.

Researchers agreed that computer technology has had a tremendous impact on society and that there are many new developments yet to come.

Because of the tremendous impact computers have had on society and the rapid pace at which computerized businesses are advancing, there is an overwhelming demand for better educated, more qualified personnel..

There seems to be widespread agreement among business people and educators that information systems degree programs should be housed in the school of business and should provide students with technical as well as organizational skills.

Uniformity and standardization of curriculum is a real problem for educational institutions offering information systems degree programs. Only recently has a model curriculum for this area been developed. In developing this two-year project, the Data Processing Management Association Education Foundation identified existing computer programs in colleges and universities as well as identifying industry's real needs. These curriculum guidelines should introduce some much needed uniformity to the U.S. business information systems education.

Additional inquiry is needed to increase available knowledge of the status and trends of information systems programs in accredited schools of business; particularly, the core or introductory course in data processing/information processing.

CHAPTER III

DESIGN AND PROCEDURES

Designed to obtain data from AACSB-accredited domestic educational institutions, this study focused on programs in the computer information systems area. Data were obtained from respondents regarding degree programs offered in information systems, courses offered within these degree programs, in-depth information on the introductory or core course in information systems, and faculty status and trends in the information systems area. Through descriptive data obtained, it is possible to show the percentage of AACSB schools offering degree programs or a major emphasis in the information systems area and courses offered within those programs. Institutions responding who offer a degree program have provided data to reveal faculty status and trends including the demand for personnel in this area. The descriptive data are further used to show percentage relationships between college of business enrollment size and degree programs offered, programming language(s) taught and computer usage, and other relevant data concerning information systems programs.

This chapter elaborates on the research design by describing the study instrument used to gather data, the procedures used in collection of the data, and the various analyses made of the data to fulfill the purposes of the study.

The Study Instrument

The instrument formulated to gather data for this study was a questionnaire developed from a study of the literature, other research questionnaires concerned with information systems degree programs, and interviews and consultation with Oklahoma State University faculty members.

The questionnaire was revised and refined through consultation with statisticians at Oklahoma State University, through faculty in the information systems area at Oklahoma State University completing the questionnaire indicating any questionable or ambiguous items, and through an evaluation of the questionnaire by graduate students enrolled in the Summer 1981 session of Data Processing Instructional Methods at Oklahoma State University. This consultation and evaluation indicated a need for minor clarifications on specific items.

The final instrument was a printed four-page, 8 1/2 by 11 inch questionnaire (See Appendix A). It was unsigned; however, an identification number was included for purposes of follow-up. The questionnaire encompassed three sections including the following:

I. Introductory or Core Course

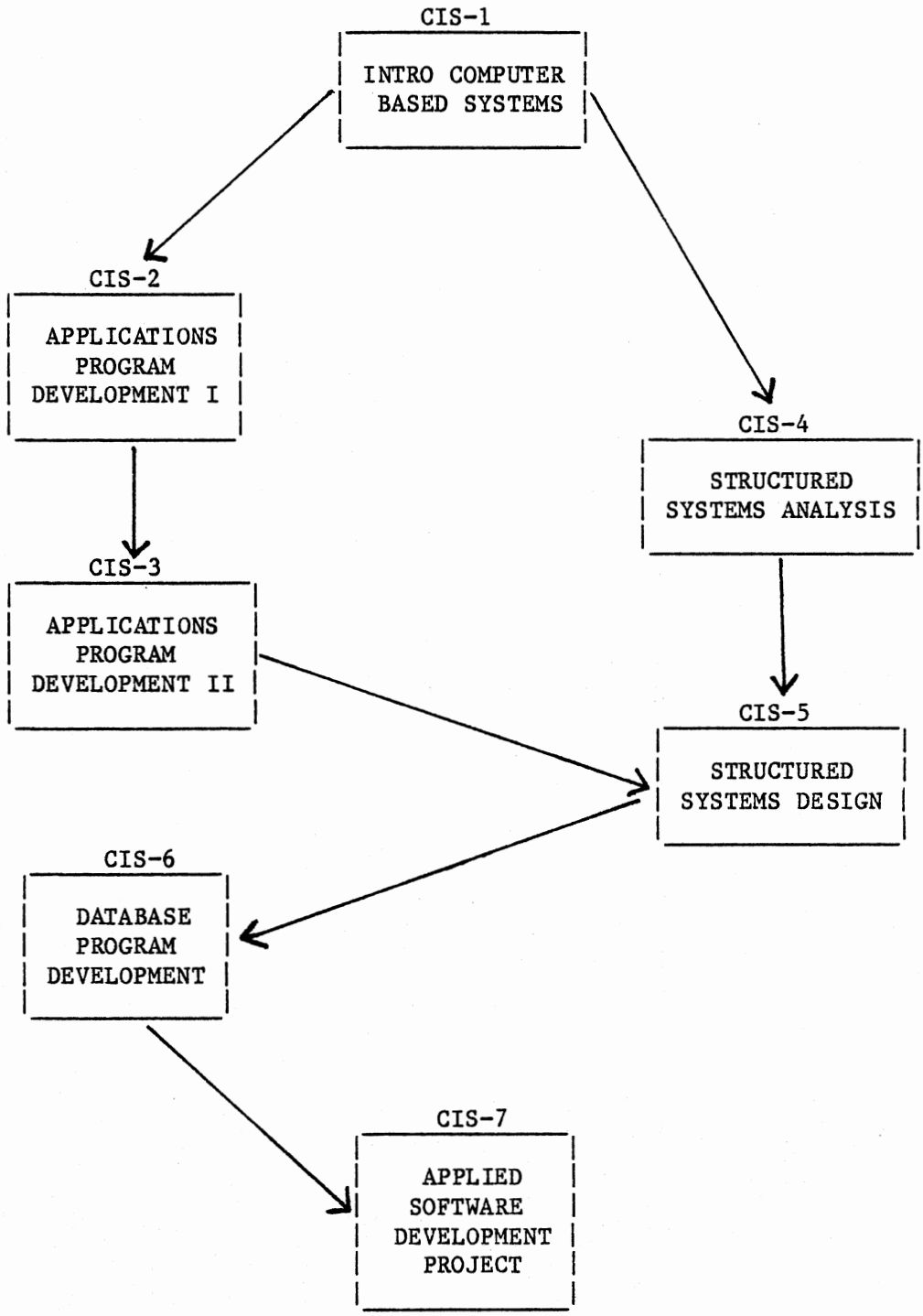
II. Information Systems Degree Program

III. Faculty

Section I regarding the introductory or core course in information processing was to be completed by all respondents. Sections II and III, completed only by institutions with degree programs or a major emphasis in the information systems area, were designed to elicit responses regarding information systems degree programs, courses included, and status and trends of faculty in the information systems area.

Section II of the study instrument included information on degree programs offered in the information systems area and course titles within those programs. Data Processing Management Association (DPMA) has developed a nationally recognized and accepted model curriculum for undergraduate computer information systems education. The objective of this model curriculum is to provide graduates with the knowledge, skills, and attitudes to function effectively as applications programmer/analysts and with the educational background and desire for life-long professional development. A study of the DPMA model curriculum and content of information systems programs at various universities was utilized in developing a comprehensive list of course titles to be included in Section II of the questionnaire. The model in Figure 1 is a conception of computer information systems curriculum core content as recommended by the DPMA Model Curriculum. Computer Information Systems elective courses were also included in the study instrument, however, are not shown in the model.

To facilitate ease of completion thereby encouraging response, the survey instrument was designed in a straight forward, easy-to-answer format. Related to the purpose of the study, the questions were formulated to be as clear, specific, and concise as possible. In developing the questionnaire for reliability and attractiveness, clear and complete directions were included with a title reflecting the purpose of the study, type style and size were varied for headings, and professional quality reproduction was utilized.



Source: "DPMA's Model Curriculum Project." (Project presented by Data Processing Management Association at DPMA Philadelphia '80, October, 1980.)

Figure 1. Model Computer Information Systems Curriculum Core

Collection of the Data

In the early planning stages of this study, a decision was made to include all domestic educational institutions accredited by the American Assembly of Collegiate Schools of Business (AACSB). An AACSB membership directory was obtained which included a complete AACSB membership profile. Total AACSB membership consists of 696 institutions: 563 domestic educational institutions, 50 international education institutions, and 83 business, government, and professional institutions. Of the 563 domestic educational institutions, 214 are accredited. AACSB's accreditation function is conducted by the Accreditation Council, comprised of AACSB member institutions accredited at the baccalaureate and/or masters level. Through its accrediting function, the AACSB provides guidelines to educational institutions in program, resource, and faculty planning.

The desired sample was chosen from the AACSB membership directory and envelopes were addressed to all domestic educational institutions accredited by AACSB.

The original mailing was sent to 214 institutions and included a cover letter, the study instrument, and an addressed postage-paid return envelope. Letters were addressed to the Dean's of Colleges of Business with a request to the Dean to forward the letter and questionnaire to the appropriate person, encouraging that individual to complete and return the questionnaire. The cover letter was reproduced on Oklahoma State University stationery and co-signed by Dr. Herbert Jelley, doctoral committee chairman.

Six weeks after the original mailing was completed a follow-up letter, a copy of the questionnaire, and an addressed postage-paid return

envelope were sent to all non-respondents. The follow-up letter was also reproduced on Oklahoma State University stationery and co-signed by Dr. G. Daryl Nord, doctoral dissertation adviser.

The timetable for mailings of the original and follow-up materials was as follows:

1. Original mailing--September 28, 1981
   Date requested for return--November 1, 1981

2. Follow-up mailing--November 9, 1981
   Date requested for return--December 1, 1981

There were 172 return replies on this study instrument from the 214 educational institutions contacted. This is an 80.4 percent response. The percentage of returns and non-returns is reported in Table I.

TABLE I

DISTRIBUTION OF THE POPULATION BY RETURNS AND NON-RETURNS TO THE STUDY INSTRUMENT

Category	Number	Percent Total (N = 214)	Percent Contacted (N = 214)
Total institutions in population	214	100.0	-
Total institutions thought to have been contacted	214	100.0	100.0
Total respondents from first mailing	122	57.0	57.0
Total respondents from follow-up mailing	50	23.4	23.4
Total respondents	172	80.4	80.4
Total non-respondents	42	19.6	19.6

Analysis of the Questionnaire Responses

Responses gathered from the questionnaires were coded and punched on data cards for use in computer tabulations. To fulfill the first purpose of the study, a Statistical Analysis System (SAS) program was utilized to reveal frequencies and percentages of each response included in the questionnaire.

Further analyses were conducted using a SAS program to indicate percentage relationships and/or association between college of business enrollment size and degree programs offered, programming languages taught and computer usage, college of business enrollment size and approximate enrollment in each section of the introductory information processing class, and other relevant information. These comparisons were analyzed using tables and the chi-square test for significance.

The areas of investigation through the study instrument are presented to aid the reader in the interpretation of the data (See Appendix A). The study instrument or questionnaire is divided into three major areas. The analysis used for each area of the questionnaire are presented first followed by a description of the treatment of the responses in analyzing the data.

Introductory or Core Course

This section of the questionnaire regarding the introductory or core course in information systems programs was analyzed using frequency tables and percentages in an attempt to identify status and trends of the introductory information systems course in AACSB-accredited business programs and to identify a direction for recommendations and improvement in the introductory or core course in information processing. Those

items which included the designation of "other" and provided space for specification or comments are reported in separate tables with the responses and frequencies included.

Responses to question five regarding programming languages taught in the introductory course are reported as stated above. The frequency and percentage of institutions offering only one of the specified languages as well as the frequency and percentage of institutions offering two or more languages are also reported. In addition, programming languages offered are listed by percentages from the highest to the lowest.

Responses to question nine regarding approximate total enrollment of undergraduate students in the college of business were subdivided and classified according to three groups: small, medium, and large. The sub-divisions were used for comparisons with other selected items included in the study instrument.

Information Systems Degree Program

The second area of the questionnaire concerning information systems degree programs in AACSB-accredited institutions was analyzed using frequency tables and percentages in an attempt to identify the extent to which AACSB-accredited institutions offer degree programs and courses offered within those programs. Responses to the first item regarding the status of information systems degree programs were also utilized for making comparisons with approximate undergraduate enrollment in colleges of business.

Faculty Status and Trends

The third area of the questionnaire included questions concerning faculty status and trends in information systems programs. The five items included were analyzed using frequency tables and percentages in an attempt to identify status and trends of faculty in the information systems area.

Two-way tables using the chi-square test for significance were utilized in comparing selected items included in the study instrument.

Using the Statistical Analysis System (SAS), available through the Oklahoma State University computer center, the data were analyzed as described. Blank responses were not used in computing percentages.

The conclusions drawn in this study are based on the statistical results reported in terms of percentages either in the body of the thesis or in the appendices.

Summary

This chapter has described the research design and procedures of the study and has presented a computer information systems curriculum core model used in developing a portion of the questionnaire. The questionnaire was administered through an original mailing to all AACSB-accredited domestic educational institutions and a follow-up mailing to non-respondents. Several steps were taken to increase the response rate: formulation of a good questionnaire, selection of an appropriate population, development of an appealing cover letter, and pursuit of non-respondents. These steps have resulted in obtaining a high response rate thereby contributing to a more valid, reliable study.

The study instrument, the population used, and the procedures utilized to collect the data were described. The chapter concludes with explanations of the statistical procedures employed to analyze the data in each of the three sections included in the study instrument.

Chapter IV presents the analysis of the data for this study.

CHAPTER IV

ANALYSIS OF DATA

The data gathered from the study instrument sent to all AACSB-accredited domestic educational institutions covers status and trends of information systems degree programs including the introductory or core course in information processing, course titles within the degree program, and faculty status and trends in the information systems area. Findings are presented from a detailed analysis of the responses from the study instrument.

Plan for Gathering and Analyzing Data

Section I of the study instrument was planned to elicit responses from AACSB-accredited institutions regarding the introductory or core course that meets the computer related course requirement as specified by the American Assembly of Collegiate Schools of Business (AACSB). The particular items selected for inclusion in this section were chosen through review of other questionnaires, interviews with instructors of the introductory course, and suggestions from Oklahoma State University professors concerned with the information systems area. Allowance was made in the questionnaire for the addition and clarification of "other" responses.

Section II of the study instrument included statements concerning the status of Information Systems degree programs by which the

respondent determined whether to complete the questionnaire. Completed only by institutions with degree programs or a major emphasis in the information systems area, Sections II and III were designed to elicit responses regarding information systems degree programs, courses included, and faculty status and trends in the information systems area.

A Statistical Analysis System (SAS) program was utilized to tabulate the responses of each item included in the questionnaire. The results from each item were tabulated according to frequency of occurence, accumulative frequency, percentage, and accumulative percentage.

The approximate total enrollment of undergraduate students in the college of business was divided into three groups--small, medium, and large. Institutions with a college of business enrollment of 1600 or less were classified as small, 1601-3200 students in the college of business encompassed what was classified as a medium-sized institution, while 3201 and above were classified as large institutions. Two-way tables were utilized to compare these three classifications (small, medium, large) with the results of the first portion of Section II concerning information systems degree programs. In addition, college enrollment size was also used to compare the average enrollment in each section of an introductory course in information processing. A two-way table was implemented in analyzing the relationship between programming language(s) taught and type of computer utilized for instruction.

The specific results of the findings may be seen in Appendix C and in the various tables in the following discussion.

Data Analysis

Responses were received from educational institutions in 46 states throughout the United States. The analysis of the data obtained from the

questionnaires received is divided into four sections: an analysis of the introductory or core course offered by AACSB-accredited institutions in information systems; an analysis of the extent to which AACSB-accredited institutions offer degree programs in information systems and courses offered within these programs; faculty status and trends in information systems programs at AACSB-accredited institutions; and relational comparisons of various items included in the study instrument.

First, the section regarding the introductory or core course in information systems was sub-divided into 11 areas: course title, level of course, hours credit, graduate credit allowed, programming languages(s) taught, computer usage, average enrollment per section, number of sections per semester, total undergraduate college of business enrollment, basic textbook(s) utilized, and topics included. Each ~~sub-division~~ was analyzed by the use of frequencies and percentages. The total undergraduate college of business enrollment responses were classified according to three groups: small, medium, and large.

Second, the information systems degree program section was sub-divided into two areas: status of information systems degree programs in AACSB-accredited institutions. Each area was analyzed by the use of frequencies and percentages.

Third, the section regarding faculty in the information systems area was sub-divided into five areas: full-time faculty, part-time faculty, faculty hired within the last two years, current openings for faculty positions in the information systems area, and anticipation of employing additional faculty within the next two years. The faculty section of the questionnaire was also analyzed using frequencies and percentages to determine status and trends of faculty positions in the information systems area of AACSB-accredited institutions.

Finally, various items in the study instrument were compared utilizing two-way tables and the chi-square test for significance. Each programming language listed in question five of the study instrument was compared with question six concerning computer usage in the introductory course. Question nine regarding the approximate total undergraduate enrollment in the college of business, classified into groups of small, medium, and large, was compared with the status of information systems degree programs as well as question seven regarding average enrollment per section in an introductory course.

Analysis of Introductory or Core Course

Presented in this section are responses concerning the introductory or core course that meets the computer related course requirement offered by educational institutions accredited by AACSB. Space was provided on the questionnaire for respondents to specify a response classified as "other". Their responses are included in the text of this section.

The introductory or core course section included 11 questions. See Appendix A for the complete questions. An abbreviated form of the question is used in each table. Items in the questionnaire are presented followed by the number of responses to each question and an analysis of the data.

Respondents were requested to identify the course title that most closely approximated the title of their introductory or core course in information systems. As presented in Table II, 38 respondents, or 22.35 percent, indicated that "Introduction to Data Processing" was used as their introductory course title while 33 institutions, or 19.41 percent, utilized the title "Introduction to Information Systems". "Introduction to Computer-Based Systems" was the third most popular title used of those

TABLE II

ANALYSIS OF INTRODUCTORY COURSE TITLE

Course Title	Frequency	Cum. Freq.	Percent	Cum. Percent
Introduction To Data Processing	38	38	22.35	22.35
Introduction to Information Processing	11	49	6.47	28.83
Business Data Processing Concepts	18	67	10.59	39.41
Introduction to Information Systems	33	100	19.41	58.82
Introduction to Computer Based Systems	23	123	13.53	72.35
Other	47	170	27.65	100.00
Did Not Respond	2	172	-	-

listed on the questionnaire, with 23 respondents, or 13.53 percent, indicating that this course title was utilized for their introductory course. "Business Data Processing Concepts" and "Introduction to Information Processing" were utilized for the introductory course title by 10.59 percent and 6.47 percent, respectively of the institutions responding to this item.

Forty-seven respondents, or slightly more than 27 percent of the total respondents, reported that they used a course title other than those listed on the questionnaire for their introductory course in information systems. Course titles listed by those who chose to specify, as requested on the questionnaire, are summarized in Table III.

Table IV contains an analysis of the level at which the introductory information systems course is offered. Seventy-two, or 42.86 percent, of the respondents indicated that their course is offered at the sophomore level. Forty-six, or 27.38 percent, of the educational institutions responding offer the introductory course at the freshman level, while 35, or 20.83 percent offer this course at the junior level. Only five respondents, or 2.98 percent, indicated that their introductory course was offered at the senior level.

Ten of the respondents, or 5.95 percent, indicated that their introductory course in information systems was a graduate level course, which was not an option on the questionnaire. This response was written in by the respondents and was therefore coded and included as a part of the statistical analysis for this item.

As summarized in Table V, over three-fourths, or 75.15 percent, of the respondents indicated that three semester hours credit or equivalent was granted for their introductory course in information systems. Responses other than two, three, or four semester hours or equivalent

TABLE III

INTRODUCTORY COURSE TITLES THAT WERE NOT LISTED ON THE QUESTIONNARE BUT SPECIFIED UNDER "OTHER"

Course Title	Frequency
Management Information Systems	5
Computer Applications for Business	4
Computers in Business	4
Introduction to Business Data Processing	2
Introduction to Data Processing and Information Systems	2
Beginning Programming	1
Accounting Information Systems	1
Computers in Management	1
Management Science and Computers	1
Computer Content	1
Introduction to Computing	1
Introduction to Computer Data Processing	1
Introduction to Computer Science	1
Managerial Computing	1
Computer Concepts	1
Production Operations and Information Systems	1
Computer Systems for Managers	1
Elements of Data Processing	1
The Computer in Business	1
Computer Methods	1
Information Processing for Management	1
Introduction to Computers and Management, Information Systems	1

TABLE III (Continued)

Course Title	Frequency
Computers: Introduction, Applications, Implications	1
Introduction to Digital Computer Programming	1
Introduction to Computers in Business	1
Computer Systems and BASIC Programming	1

TABLE IV

ANALYSIS OF LEVEL OF INTRODUCTORY COURSE

Level	Frequency	Cum. Freq.	Percent	Cum. Percent
Freshman	46	46	27.38	27.38
Sophomore	72	118	42.86	70.24
Junior	35	153	20.83	91.07
Senior	5	158	2.98	94.05
Graduate	10	168	5.95	100.00
Did Not Respond	4	172	-	-

TABLE V

ANALYSIS OF HOURS CREDIT GRANTED
FOR INTRODUCTORY COURSE

Hours Credit	Frequency	Cum. Freq.	Percent	Cum. Percent
2 Semester Hours or Equivalent	8	8	4.73	4.73
3 Semester Hours or Equivalent	127	135	75.15	79.88
4 Semester Hours or Equivalent	21	156	12.43	92.31
Other	13	169	7.69	100.00
Did Not Respond	3	172	-	-

encompassed only 7.69 percent of the cumulative percentage. Other responses listed by those who chose to specify, as requested on the questionnaire, are summarized in Table VI.

The fourth item in the introductory or core course section of the study instrument requested respondents to indicate whether they allowed graduate credit for the introductory information processing course. Table VII summarizes these results.

It is interesting to note that only 11.98 percent offer graduate credit for the introductory course, however, some comments were made indicating that a separate introductory course is offered by many institutions at the graduate level.

Table VIII contains a list of programming languages as included in the study instrument, whether a "yes" or "no" response was indicated, and an analysis of the response. Only three respondents, of the total respondents, did not respond to this item.

The percentages indicating that a specific programming language is taught in their introductory information processing course are presented in Table IX arranged from the highest percentage to the lowest. Forty-eight institutions, or 28.4 percent of the total respondents, introduced at least two or more programming languages in their introductory course, therefore percentages exceed 100 percent. Seventy-four institutions, or 43.7 percent, introduce only BASIC, eight institutions, or 4.7 percent, introduce only COBOL, 26 institutions, or 15.4 percent, introduce only FORTRAN, and three institutions, or 1.8 percent, introduce only PL/1 in the introductory information processing course.

Respondents indicated that BASIC is introduced in their introductory course more than any other programming language. Over one-third of

TABLE VI

HOURS CREDIT GRANTED FOR INTRODUCTORY COURSE
OTHER THAN TWO, THREE, OR FOUR SEMESTER
HOURS OR EQUIVALENT

Hours Credit	Frequency
1 Credit Hour	1
3 Quarter Hours	2
4 Quarter Hours	3
5 Quarter Hours	1

TABLE VII

ANALYSIS OF GRADUATE CREDIT ALLOWED
FOR INTRODUCTORY COURSE

Graduate Credit Allowed	Frequency	Cum. Freq.	Percent	Cum. Percent
Yes	20	20	11.98	11.98
No	147	167	88.02	100.00
Did Not Respond	5	172	-	-

TABLE VIII

ANALYSIS OF PROGRAMMING LANGUAGES
IN INTRODUCTORY COURSE

Programming Language	Frequency	Cum. Freq.	Percent	Cum. Percent
BASIC				
Yes	109	109	64.50	64.50
No	60	169	35.50	100.00
Did Not Respond	3	172	-	-
COBOL				
Yes	32	32	18.93	18.93
No	137	169	81.07	100.00
Did Not Respond	3	172	-	-
FORTRAN				
Yes	56	56	33.14	33.14
No	113	169	66.86	100.00
Did Not Respond	3	172	-	-
PASCAL				
Yes	10	10	5.92	5.92
No	159	169	94.08	100.00
Did Not Respond	3	172	-	-
PL/1				
Yes	8	8	4.73	4.73
No	161	169	95.27	100.00
Did Not Respond	3	172	-	-
RPG/RPG II				
Yes	2	2	1.18	1.18
No	167	169	98.82	100.00
Did Not Respond	3	172	-	-

TABLE VIII (Continued)

Programming Language	Frequency	Cum. Freq.	Percent	Cum. Percent
Other				
Yes	14	14	8.28	8.28
No	155	169	91.72	100.00
Did Not Respond	3	172	-	-

TABLE IX

PROGRAMMING LANGUAGES INTRODUCED
IN INTRODUCTORY COURSE

Programming Language	Frequency	Percentage
BASIC	109	64.50
FORTRAN	56	33.14
COBOL	32	18.93
"OTHER"	14	8.28
PASCAL	10	5.92
PL/1	8	4.73
RPG/RPG II	2	1.18

the respondents indicated that FORTRAN is introduced in their introductory course, while only 18.93 percent of the total respondents introduce COBOL in their introductory information processing course. Fourteen respondents, or 8.28 percent, introduce a programming language(s) other than those listed on the questionnaire. These results are summarized in Table X.

Participants were asked to indicate computer usage in their introductory information processing course.

The data presented in TABLE XI indicate that over one-half, or 60.95 percent of the institutions utilize a centrally located computer exclusively. Fifty-four respondents, or 31.95 percent, indicated that both a centrally located computer(s) and mini-micro computer(s) were utilized. Nine institutions, or 5.33 percent, use mini-micro computer(s) exclusively, while only three respondents, or 1.77 percent, indicated that no computer was utilized in the introductory information processing course.

Analysis of the average enrollment in each section of the introductory course in information systems is summarized in Table XII. No institutions have 20 students or less in a section of the introductory information processing course, however, 73 institutions, or 43.45 percent, have an average enrollment per section of 21-40 students. Fifty-eight institutions, or 34.53 percent, include 41-60 students in their introductory information processing course. Less than one-fourth of the total respondents have sections of an introductory course with an average enrollment of 61 students or more. Only four respondents, or 2.38 percent, indicated an average enrollment of more than 141 students which was designated by a response in the "other" area and included a space for

TABLE X

PROGRAMMING LANGUAGES OFFERED IN THE INTRODUCTORY COURSE
THAT WERE NOT INCLUDED ON THE QUESTIONNAIRE
BUT SPECIFIED UNDER "OTHER"

Programming Language	Frequency
APL	2
DATAMILL	1
GPSS	1
PLOTALL	1
SPSS	1
VAX	1

TABLE XI

ANALYSIS OF COMPUTER USAGE IN INTRODUCTORY COURSE

Computer Usage	Frequency	Cum. Freq.	Percent	Cum. Percent
Students Do Not Use A Computer	3	3	1.77	1.77
Students Use Both A Centrally Located Computer(s) and Mini-Micro Computer(s)	54	57	31.95	33.72
Students Use A Centrally Located Computer(s)	103	160	60.95	94.67
Students Use Mini-Micro Computer(s)	9	169	5.33	100.00
Did Not Respond	3	172	-	-

TABLE XII

ANALYSIS OF AVERAGE ENROLLMENT IN EACH SECTION OF THE INTRODUCTORY COURSE

Enrollment	Frequency	Cum. Freq.	Percent	Cum. Percent
20 Students or Less	0	0	0.00	0.00
21-40 Students	73	73	43.45	43.45
41-60 Students	58	131	34.53	77.97
61-80 Students	14	145	8.33	86.31
81-100 Students	8	153	4.76	91.07
101-120 Students	1	154	0.60	91.67
121-140 Students	4	158	2.38	94.05
141 Students or More	6	164	3.57	97.62
Other	4	168	2.38	100.00
Did Not Respond	4	172	-	-

comments. These results with comments are summarized in Table XIII.

Respondents were requested to indicate the number of sections of the introductory course in information systems offered per academic semester at their institution. The responses of the participants are shown in Table XIV. Forty-eight institutions, or 28.57 percent, offer from 2-4 sections of the introductory course per academic semester. Forty-two respondents, or 25 percent, indicated that their institution offered from 5-7 sections of the introductory course. Twenty-eight institutions, or 16.67 percent, included from eight to ten sections of the introductory course in their information systems area. As indicated in Table XIV, each of the other possible responses were checked by 13 or less respondents per item. Only four participants did not respond.

Respondents were also asked to indicate the approximate total enrollment of undergraduate students in the college of business at their institution. Enrollments ranged from zero to 11,500. Those institutions indicating an enrollment of zero were graduate institutions only. A complete summary of the approximate total enrollment with frequencies and percentages are presented in Table XV.

For purposes of comparison with other items in the study instrument, the approximate total undergraduate enrollment was classified into three groups: small, medium, and large. Institutions with an enrollment in the college of business of 1600 or less were classified as small institutions, universities with 1601-3200 students in the college of business were classified as medium-sized institutions, while 3201 or more students in the college of business at an AACSB-accredited institution was classified as a large institution.

TABLE XIII

ENROLLMENT AND COMMENTS OF AVERAGE ENROLLMENT PER SECTION OF THE INTRODUCTORY COURSE THAT WERE NOT INCLUDED ON THE QUESTIONNAIRE BUT LISTED UNDER "OTHER"

Enrollment	Comments
300 Students	Lecture/Lab Method (Two large concepts sections and 12 labs per semester--lecture sections for two hours with 300 students each supplemented with small programming sections for one hour credit.

TABLE XIV

ANALYSIS OF THE NUMBER OF SECTIONS PER SEMESTER
IN THE INTRODUCTORY COURSE

Number of Sections	Frequency	Cum. Freq.	Percent	Cum. Percent
1 Section	7	7	4.17	4.17
2-4 Sections	48	55	28.57	32.74
5-7 Sections	42	97	25.00	57.74
8-10 Sections	28	125	16.67	74.41
11-13 Sections	13	138	7.74	82.15
14-16 Sections	13	151	7.74	89.89
17-19 Sections	4	155	2.38	92.27
20 Sections or More	13	168	7.73	100.00
Did Not Respond	4	172	-	-

TABLE XV

APPROXIMATE TOTAL UNDERGRADUATE ENROLLMENT
IN COLLEGES OF BUSINESS

Enrollment	Frequency	Cum. Freq.	Percent	Cum. Percent
0	10	10	6.21	6.21
50	1	11	0.62	6.83
160	1	12	0.62	7.45
200	1	13	0.62	8.07
234	1	14	0.62	8.69
250	1	15	0.62	9.31
350	1	16	0.62	9.93
400	1	17	0.62	10.55
500	3	20	1.87	12.42
550	1	21	0.62	13.04
600	4	25	2.48	15.52
700	1	26	0.62	16.14
750	1	27	0.62	16.77
800	3	30	1.86	18.63
850	2	32	1.24	19.87
900	2	34	1.24	21.11
935	1	35	0.62	21.73
950	2	37	1.25	22.98
1000	5	42	3.10	26.08
1050	1	43	0.62	26.70
1070	1	44	0.62	27.32
1200	5	49	3.11	30.43

TABLE XV (Continued)

Enrollment	Frequency	Cum. Freq.	Percent	Cum. Percent
1300	3	52	1.86	32.29
1350	1	53	0.62	32.91
1383	1	54	0.62	33.53
1468	1	55	0.62	34.15
1500	2	57	1.25	35.40
1550	1	58	0.62	36.02
1600	7	65	4.35	40.37
1700	3	68	1.86	42.23
1750	1	69	0.62	42.85
1800	1	70	0.62	43.47
1820	1	71	0.62	44.09
1900	1	72	0.62	44.71
1950	1	73	0.62	45.34
2000	11	84	6.83	52.17
2100	4	88	2.48	54.65
2300	5	93	3.11	57.76
2400	1	94	0.62	58.38
2500	8	102	4.97	63.35
2540	1	103	0.62	63.97
2600	1	104	0.62	64.59
2650	1	105	0.62	65.21
2700	1	106	0.62	65.83
2800	2	108	1.25	67.08
3000	8	116	4.97	72.05

TABLE XV (Continued)

Enrollment	Frequency	Cum. Freq.	Percent	Cum. Percent
3025	1	117	0.62	72.67
3061	1	118	0.62	73.29
3200	2	120	1.24	74.53
3261	1	121	0.62	75.15
3300	2	123	1.24	76.39
3321	1	124	0.62	77.01
3400	1	125	0.62	77.63
3500	2	127	1.25	78.88
3600	1	128	0.62	79.50
3700	1	129	0.62	80.12
3900	1	130	0.62	80.74
4000	3	133	1.86	82.60
4300	2	135	1.24	83.85
4500	4	139	2.48	86.33
4800	1	140	0.62	86.95
5000	6	146	3.73	90.68
5300	1	147	0.62	91.30
5500	1	148	0.62	91.92
6000	6	154	3.73	95.65
6500	1	155	0.62	96.27
6800	1	156	0.62	96.89
7000	2	158	1.24	98.13
8000	1	159	0.62	98.75
10000	1	160	0.62	99.37

TABLE XV (Continued)

Enrollment	Frequency	Cum. Freq.	Percent	Cum. Percent
11500	1	161	0.62	100.00
Did Not Respond	11	172	-	-

Fourteen introductory information processing texts were listed on the questionnaire and a space for respondents to indicate that a text other than those listed was utilized. Beside the "other" response was a request for the author and title of the textbook to be specified. Ninety-five, or 58.64 percent of the respondents, indicated that a text other than those listed was used in their introductory course in information systems. As presented in Table XVI, only two texts listed on the questionnaire, Elliott, Introduction to Data Processing, and Stern and Stern, Principles of Data Processing, are not used by any of the AACSB-accredited institutions responding. The two most popular texts for the introductory course, of those listed, are Shelly and Cashman, Introduction to Computers and Data Processing and Mandell, Computers and Data Processing with BASIC with 11.73 percent and 9.88 percent respectively. Each of the other texts listed are used by five percent or less of the institutions responding. It is evident that there was very little consensus regarding the introductory text utilized by AACSB-accredited institutions. Fifty-five different textbooks were listed under the "other" category, and responses indicate that 12 out of the 14 texts listed on the questionnaire were utilized to some extent by the participating institutions. This is a total of 67 different textbooks used for the introductory information processing course by the 162 institutions responding to this question. The two texts which received the most responses in the "other" category were Kroenke, Business Computer Systems, and Stair, Principles of Data Processing, each receiving support from eight universities.

Over one-half of the participants utilized a text other than those listed on the questionnaire, therefore, these texts and frequencies are presented in Table XVII.

TABLE XVI

TEXTBOOK USED FOR INTRODUCTORY COURSE

Textbook	Frequency	Cum. Freq.	Percent	Cum. Percent
Awad, *Introduction to Computers in Business*				
Yes	4	4	2.47	2.47
No	158	162	97.53	100.00
Did Not Respond	10	172	-	-
Bohl, *Information Processing*				
Yes	3	3	1.85	1.85
No	159	162	98.15	100.00
Did Not Respond	10	172	-	-
Couger and McFadden, *First Course in Data Processing*				
Yes	1	1	0.62	0.62
No	161	162	99.38	100.00
Did Not Respond	10	172	-	-
Davis, *Computers and Information Processing*				
Yes	7	7	4.32	4.32
No	155	162	95.68	100.00
Did Not Respond	10	172	-	-
Dock and Essick, *Principles of Business Data Processing*				
Yes	5	5	3.09	3.09
No	157	162	96.91	100.00
Did Not Respond	10	172	-	-
Elliott, *Introduction to Data Processing*				
Yes	0	0	0.00	0.00
No	162	162	100.00	100.00
Did Not Respond	10	10	-	-

TABLE XVI (Continued)

Textbook	Frequency	Cum. Freq.	Percent	Cum. Percent
Feingold, Introduction to Data Processing				
Yes	3	3	1.85	1.85
No	159	162	98.15	100.00
Did Not Respond	10	172	-	-
Mandell, Computers and Data Processing with BASIC				
Yes	16	16	9.88	9.88
No	146	162	90.12	100.00
Did Not Respond	10	172	-	-
Murach, Business Data Processing				
Yes	6	6	3.70	3.70
No	156	162	96.30	100.00
Did Not Respond	10	172	-	-
Sanders, Computers in Business				
Yes	2	2	1.24	1.24
No	160	162	98.76	100.00
Did Not Respond	10	172	-	-
Shelly and Cashman, Introduction to Computers and Data Processing				
Yes	19	19	11.73	11.73
No	143	162	88.17	100.00
Did Not Respond	10	172	-	-
Silver and Silver, Data Processing for Business				
Yes	4	4	2.47	2.47
No	158	162	97.53	100.00
Did Not Respond	10	172	-	-

TABLE XVI (Continued)

Textbook	Frequency	Cum. Freq.	Percent	Cum. Percent
Spencer, *Introduction to Information Processing*				
Yes	7	7	4.32	4.32
No	155	162	95.68	100.00
Did Not Respond	10	172	-	-
Stern and Stern, *Principles of Data Processing*				
Yes	0	0	0.00	0.00
No	162	162	100.00	100.00
Did Not Respond	10	172	-	-
"Other"				
Yes	95	95	58.64	58.64
No	67	162	41.36	100.00
Did Not Respond	10	172	-	-

TABLE XVII

TEXTBOOKS USED FOR INTRODUCTORY COURSE THAT WERE NOT LISTED ON THE QUESTIONNAIRE BUT SPECIFIED UNDER "OTHER"

Textbook	Frequency
Ageloff and Mojena, Applied BASIC Programming	2
Albrecht, Finkel, and Brown, BASIC	1
Boillot and Shingles, Understanding WATFIV	1
Bosworth and Nagel, Programming in BASIC for Business	1
Condon, Data Processing with Applications	1
Cross, FORTRAN IV with WATFOR and WATFIV	1
Cushing, Accounting Information Systems	2
Davis and Hoffman, FORTRAN: A Structured Discipline Style	1
Davis, Information Processing Systems	1
Dock, Structured COBOL: American National Standard	1
Dunning, Getting Started in GPSS	1
Edwards and Broadwell, Data Processing: Computers in Action	1
Fitzgerald, Fitzgerald, and Stallings, Fundamentals of Systems Analysis	2
Fuori, Introduction to the Computer	3
Gore and Stubbe, Computers and Data Processing	1
Graham, Mind Tool	1
Harms, Introduction to APL and Computer Programming	1
Hayden and Ledgard, BASIC with Style	1
Horn, BASIC	1
Hussain and Hussain, Information Processing Systems for Management	1

TABLE XVII (Continued)

Textbook	Frequency
Jackson, Computer Models in Management	1
Kantes, Management Oriented Management Information Systems	1
Khailany, Introduction to FORTRAN	1
Kroenke, Business Computer Systems	8
Lewis and Hart, Business FORTRAN: A Structured Approach	1
Lucas, Information Systems	4
Mader, Information Systems	2
Mandell, Principles of Data Processing	1
Martin and Perkins, FORTRAN for Business Students: A Programmed Instruction Approach	1
May, Programming Business Applications in FORTRAN	1
McCameron and Fritz, FORTRAN IV	2
McLeod, Management Information Systems	3
Moscore and Simkin, Accounting Information Systems	1
Murdick and Ross, Introduction to Management Information Systems	1
Nelson, Burras, Gillas, and King, BASIC: A Simplified Structured Approach	1
Nickerson, Fundamentals of FORTRAN Programming	1
O'Brien, Computers in Business Management	5
Orilia, Introduction to Business Data Processing	3
Page and Didday, FORTRAN 77 for Humans	1
Peters and Oliva, Production/Operations Management	1
Planisek, Computer Usage	1
Presley, Introduction to BASIC-PLUS	1
Price, Introduction to Computer Data Processing	1

TABLE XVII (Continued)

Textbook	Frequency
Ross, Modern Management Information Systems	1
Sardinas, Computing Today	2
Sawatzky, Programming in BASIC PLUS	1
Shelly and Cashman, Structured COBOL	1
Shelly and Cashman, Business Systems Analysis and Design	1
Stair, Principles of Data Processing	8
Taggert, Informaton Systems: An Introduction to Computers in Organizations	1
Tomeski, Fundamentals of Computers in Business	1
Tremblay, Bunt, Richardson, PL/1 Programming	1
Trombatta, BASIC for Students With Applications	1
Voich, et al, Information Systems for Operations	1
Watson and Carroll, Computers for Business: A Managerial Approach	3

The last item in Section I regarding the introductory or core course included a chart with a list of topics frequently taught in an introductory information processing course. Respondents were asked to indicate the percentage of time devoted to each topic. Space was provided with percentages ranging from zero to 100 percent divided into increments of ten, as well as a space for designating that a specific topic was not included in the introductory course in information systems.

Seventy-four percent, or 128 of the respondents, indicated that they devote from zero to ten percent of the semester on the history of information processing and computers. Over two-thirds of the respondents devote from zero to 20 percent of the semester on the introduction to computer systems which includes input, output, and processing. Approximately 50 percent of the participants indicated that from 21 to 50 percent of the semester is devoted to programming languages, while 80 percent of the respondents devote from zero to 30 percent of the semester on information processing applications in business. Seventy percent, or over two-thirds of the institutions responding devote from zero to 20 percent of the semester on systems analysis. Likewise, over 60 percent of the respondents indicated that from zero to 20 percent of their time is devoted to Management Information Systems. Over 79 percent of the respondents indicated that they did not include topics other than those listed on the questionnaire. The small percentage indicating that other topics are included in their introductory course listed the following topics: Flowcharting concepts, teleprocessing, societal impact, computer crime, teleprocessing, data base, distributed data processing, futurism, internal control, and various other information systems related topics.

The most frequently listed topics were societal impact, computer crime, and data base. A complete summary of the results is presented in Table XVIII.

Analysis of Information Systems Degree Programs

The second part of the questionnaire concerning the status of information systems degree programs in AACSB-accredited institutions was designed to elicit responses in determining one of the following: 1) Information systems degree program or a major emphasis within this area is offered in the college of business, 2) No degree program is offered, however, implementation of a degree program or a major emphasis in information systems is planned within the next three years, or 3) No degree program or major emphasis in information systems is offered, nor have plans been made to implement such a program in the college of business within the next three years.

If the institution responding offered a degree program or a major emphasis in information systems, the remainder of the questionnaire, which included courses within the degree program and faculty status and trends, was completed by the respondent. If the participating institution did not currently offer a degree program or major area of emphasis in the information systems area, the respondent was instructed to return the questionnaire.

Over 80 percent of the participating AACSB-accredited institutions offer a degree program in information systems or plan to implement one within the next three years, with more than one-half, or 59.65 percent

TABLE XVIII

TOPICS FREQUENTLY TAUGHT IN AN INTRODUCTORY INFORMATION PROCESSING COURSE

Topic	Frequency	Cum. Freq.	Percent	Cum. Percent
History of Information Processing and Computers				
Did not respond	10	10	5.78	5.78
Do not include	29	39	16.76	22.54
0-10%	128	167	73.99	96.53
11-20%	3	170	1.73	98.26
21-30%	2	172	1.16	99.42
31-40%	1	173	0.58	100.00
Introduction to Computer Systems (Input, Output, Processing, etc.)				
Did not respond	10	10	5.78	5.78
Do not include	7	17	4.04	9.82
0-10%	53	70	30.64	40.46
11-20%	63	133	36.41	76.87
21-30%	32	165	18.50	95.37
31-40%	5	170	2.89	98.26
41-50%	2	172	1.16	99.42
51-60%	1	173	0.58	100.00
Programming Languages (COBOL, FORTRAN, BASIC, etc.)				
Did not respond	10	10	5.78	5.78
Do not include	9	19	5.20	10.98
0-10%	13	32	7.51	18.49
11-20%	13	45	7.52	26.01
21-30%	30	75	17.34	43.35
31-40%	35	110	20.23	63.58
41-50%	24	134	13.87	77.45
51-60%	18	152	10.41	87.86
61-70%	6	158	3.46	91.32
71-80%	7	165	4.05	95.37
81-90%	5	170	2.89	98.26
91-100%	3	173	1.73	100.00

TABLE XVIII (Continued)

Topic	Frequency	Cum. Freq.	Percent	Cum. Percent
Information Processing Applications in Business				
Did not respond	10	10	5.78	5.78
Do not include	17	27	9.82	15.60
0-10%	45	72	26.01	41.61
11-20%	58	130	33.53	75.14
21-30%	35	165	20.23	95.37
31-40%	4	169	2.31	97.68
41-50%	4	173	2.32	100.00
Systems Analysis				
Did not respond	10	10	5.78	5.78
Do not include	31	41	17.91	23.69
0-10%	77	118	44.52	68.21
11-20%	44	162	25.43	93.64
21-30%	8	170	4.62	98.26
31-40%	2	172	1.16	99.42
41-50%	1	173	0.58	100.00
Management Information Systems				
Did not respond	10	10	5.78	5.78
Do not include	32	42	18.49	24.27
0-10%	68	110	39.31	63.58
11-20%	42	152	24.28	87.86
21-30%	14	166	8.09	95.95
31-40%	6	172	3.47	99.42
41-50%	1	173	0.58	100.00
Other				
Did not respond	10	10	5.78	5.78
Do not include	137	147	79.19	84.97
0-10%	17	164	9.83	94.70
11-20%	8	172	4.62	99.42
21-30%	0	172	0.00	99.42
31-40%	0	172	0.00	99.42
41-50%	0	172	0.00	99.42
51-60%	0	172	0.00	99.42
61-70%	1	173	0.58	100.00

indicating that a degree program or major emphasis in information systems is currently offered in the college of business at their institution. Thirty-seven respondents, or 21.64 percent, indicated that they do not currently have a degree program or major emphasis in information systems but plan to implement one within the next three years. Approximately one-fifth of the respondents, or 18.71 percent, indicated that they do not currently have a degree program or major emphasis in information systems, nor do they plan to implement one within the next three years. Only one institution did not respond to this section regarding the status of information systems degree programs within their college of business. Complete results of the status of information systems degree programs in AACSB-accredited institutions may be seen in Table XIX.

Respondents from institutions with a degree program or major emphasis in the information systems area were requested to specify courses included in their program from nineteen different course titles listed on the study instrument. Space was designated for "other" responses for those institutions offering courses not listed on the questionnaire. The responses including frequencies and percentages for each of the course titles listed on the study instrument are shown in Table XX.

The four most frequently offered courses in information systems programs in AACSB-accredited institutions are Systems Design and Analysis I, Applications Program Development I-COBOL, Data Base Concepts, and Introduction to Information Processing. These courses are offered by 74.79, 70.59, 67.23, and 60.50 percent respectively, of the institutions responding. Applications Program Development II-COBOL is offered by 46.22 percent of the institutions, while FORTRAN is offered by less than

TABLE XIX

STATUS OF INFORMATION SYSTEMS DEGREE PROGRAMS

Status of Information Systems Program	Frequency	Cum. Freq.	Percent	Cum. Percent
Information Systems degree program or a major emphasis within this area is offered in the College of Business at our institution.	102	102	59.65	59.65
No degree program is offered, however, an Information Systems degree or major emphasis within this area will be implemented in the College of Business within the next three years.	37	139	21.63	81.28
No degree program or major emphasis in Information Systems is offered, nor will such a program be implemented in the College of Business within the next three years.	32	171	18.71	100.00
Did not respond	1	172	-	-

TABLE XX

COURSES INCLUDED IN INFORMATION SYSTEMS DEGREE PROGRAMS

Course Title	Frequency	Cum. Freq.	Percent	Cum. Percent
Introduction to Information Processing				
Yes	72	72	60.50	60.50
No	47	119	39.50	100.00
Did Not Respond	53	172	-	-
Applications Program Development I - COBOL				
Yes	84	84	70.59	70.59
No	35	119	29.41	100.00
Did Not Respond	53	172	-	-
Applications Program Development II - COBOL				
Yes	55	55	46.22	46.22
No	64	119	53.78	100.00
Did Not Respond	53	172	-	-
Systems Design and Analysis I				
Yes	89	89	74.79	74.79
No	30	119	25.21	100.00
Did Not Respond	53	172	-	-
Systems Design and Analysis II				
Yes	38	38	31.93	31.92
No	81	119	68.07	100.00
Did Not Respond	53	172	-	-
Data Base Concepts				
Yes	80	80	67.23	67.23
No	39	119	32.77	100.00
Did Not Respond	53	172	-	-

TABLE XX (Continued)

Course Title	Frequency	Cum. Freq.	Percent	Cum. Percent
FORTRAN				
Yes	36	36	30.25	30.25
No	83	119	69.75	100.00
Did Not Respond	53	172	-	-
Applied Software Development				
Yes	24	24	20.17	20.17
No	95	119	79.83	100.00
Did Not Respond	53	172	-	-
Distributed Data Processing				
Yes	18	18	15.13	15.13
No	101	119	84.87	100.00
Did Not Respond	53	172	-	-
Information Resource Management				
Yes	18	18	15.13	15.13
No	101	119	84.87	100.00
Did Not Respond	53	172	-	-
Data Communication Systems				
Yes	20	20	16.81	16.81
No	99	119	83.19	100.00
Did Not Respond	53	172	-	
Management of Information Processing				
Yes	40	40	33.61	33.61
No	79	119	66.39	100.00
Did Not Respond	53	172	-	-
EDP Auditing				
Yes	23	23	19.33	19.33
No	96	119	80.67	100.00
Did Not Respond	53	172	-	-

TABLE XX (Continued)

Course Title	Frequency	Cum. Freq.	Percent	Cum. Percent
Data Processing Law				
Yes	4	4	3.36	3.36
No	115	119	96.64	100.00
Did Not Respond	53	172	-	-
Assembly Language Programming				
Yes	30	30	25.21	25.21
No	89	119	74.79	100.00
Did Not Respond	53	172	-	-
Small Computer Software Development				
Yes	13	13	10.92	10.92
No	106	119	89.08	100.00
Did Not Respond	53	172	-	-
Management Information Systems				
Yes	65	65	54.62	54.62
No	54	119	45.38	100.00
Did Not Respond	53	172	-	-
Programming Minicomputers/ Microcomputers for Business				
Yes	18	18	15.13	15.13
No	101	119	84.87	100.00
Did Not Respond	53	172	-	-
Data Structures and Information Retrieval				
Yes	44	44	36.98	36.98
No	75	119	63.02	100.00
Did Not Respond	53	172	-	-

TABLE XX (Continued)

Course Title	Frequency	Cum. Freq.	Percent	Cum. Percent
"Other"				
Yes	44	44	36.98	36.98
No	75	119	63.02	100.00
Did Not Respond	53	172	-	-

one-third, or 30.25 percent of the AACSB-accredited business programs responding.

Management of Information Processing and Management Information Systems are offered by 33.61 percent and 54.62 percent respectively, of the educational institutions participating in this study.

Approximately one-third of the respondents indicated that the following courses are included in their information systems curriculum: Systems Design and Analysis II and Data Structures and Information Retrieval. Exact frequencies and percentages are presented in Table XX.

Only 44 respondents, or 36.98 percent, indicated that course(s) not included on the study instrument were offered in their information systems programs. A complete list of these courses with frequencies is presented in Table XXI.

Responses were received for all of the course titles listed on the study instrument. However, ten of the nineteen courses listed on the questionnaire are offered by only one-fourth of the institutions responding or less, with 25.21 percent indicating that Assembly Language Programming is included in their information systems program, while the course offered by the fewest institutions was Data Processing Law encompassing only 3.36 percent of the total respondents. Complete results are summarized in Table XXI.

Analysis of Faculty Status and Trends

Five questions were included in the third section of the study instrument concerning faculty status and trends in AACSB-accredited educational institutions. As presented in Table XXII, those institutions

TABLE XXI

COURSES INCLUDED IN INFORMATION SYSTEMS DEGREE PROGRAMS NOT LISTED ON THE QUESTIONNAIRE BUT SPECIFIED UNDER "OTHER"

Course Title	Frequency
Modeling/Simulation	14
Operating Systems	8
RPG Programming Applications	7
Decision Support Systems Development	7
File Organization/Data Management	6
Accounting Information Systems	4
PASCAL	4
Project Management and System Implementation	2
PL/1 Programming	2
Algorithmic Methods and High Level Language	2
Computer Architecture	2
Computer Applications for Business	1
Artificial Intelligence	1
Information Systems in Society	1
Policy--MIS	1
Business Applications Programming	1
Advanced Technologies	1
Management Consulting	1
Planning and Control Systems	1
Configuration Design and Procurement	1
Computerware	1
Business Computer Methods	1

TABLE XXI (Continued)

Course Title	Frequency
Symbolic Logic	1
Computer Graphics	1
Interactive Systems	1
BASIC	1
Organizational Behavior in Business	1
Computer-Aided Analysis in Business Decisions	1
Hardware/Software Topics	1
Business Related Problems	1
Automated Administrative Systems--Office of the Future	1
Computerware Analysis	1
Micrographics and Records Management	1
Word and Image Processing Concepts	1
Administrative Management	1

TABLE XXII

FULL-TIME FACULTY IN THE INFORMATION SYSTEMS AREA

Number of Full-Time Faculty	Frequency	Cum. Freq.	Percent	Cum. Percent
1	15	15	11.81	11.81
2	18	33	14.17	25.98
3	15	48	11.81	37.79
4	22	70	17.32	55.11
5	22	92	17.33	72.44
6	10	102	7.87	80.31
7	4	106	3.15	83.46
8	7	113	5.51	88.97
9	3	116	2.36	91.33
10	2	118	1.58	92.91
11	1	119	0.79	93.70
13	1	120	0.78	94.48
14	3	123	2.37	96.85
15	1	124	0.78	97.63
16	2	126	1.58	99.21
30	1	127	0.79	100.00
Did Not Respond	45	172	-	-

participating in this study employed from one to 30 full-time faculty in the information systems area, however, 80 percent of the institutions responding, employed from one to six full-time faculty members. Part-time faculty in the information systems area ranged from zero to 24. However, over 60 percent of the respondents indicated that from zero to three part-time faculty were employed. Table XXIII summarizes the results concerning part-time faculty in the information systems area at AACSB-accredited institutions.

Participants were requested to indicate whether faculty had been hired in the information systems area within the last two years.

As presented in Table XXIV, over 60 percent of the respondents indicated that they had hired faculty in the information systems area within the last two years.

Over two-thirds of the respondents, or 70.59 percent, noted that they had at least one or more faculty position opening(s) in the information systems area, while approximately one-half anticipated hiring additional faculty within the next two years. These statistics seem to indicate that the demand for faculty in the information systems area exceeds the supply. Supporting this contention, were numerous extra notations from participants to the effect that there is high demand for information systems faculty. One comment in response to the question concerning faculty position opening(s) was, "Yes--for two years." Another participant simply checked the designated space for "Yes" with an exclamatory remark of "HELP! HELP!" beside the item. Many respondents voluntarily indicated that there was more than one full-time faculty position opening in the information systems area. The last item in the faculty section of the questionnaire concerned the respondents anticipation for employing

TABLE XXIII

PART-TIME FACULTY IN THE INFORMATION SYSTEMS AREA

Number of Part-Time Faculty	Frequency	Cum. Freq.	Percent	Cum. Percent
0	21	21	16.80	16.80
1	19	40	15.20	32.00
2	24	64	19.20	51.20
3	16	80	12.80	64.00
4	11	91	8.80	72.80
6	10	101	8.00	80.80
7	5	106	4.00	84.80
8	7	113	5.60	90.40
10	5	118	4.00	94.40
12	4	122	3.20	97.60
15	1	123	0.80	98.40
20	1	124	0.80	99.20
24	1	125	0.80	100.00
Did Not Respond	47	172	-	-

TABLE XXIV

HIRED FACULTY IN THE INFORMATION SYSTEMS AREA
WITHIN THE LAST TWO YEARS

Hired Faculty Within Last Two Years	Frequency	Cum. Freq.	Percent	Cum. Percent
Yes	72	72	60.50	60.50
No	47	119	39.50	100.00
Did Not Respond	53	172	-	-

additional faculty within the next two years in the information systems area. Although faculty positions were available, some participants did not anticipate hiring within the next two years. Notations indicating that a simple "Yes" or "No" was not adequate included the following comments:

"If we can find any."

"We need faculty in the area."

"Hopefully--3 full time."

"Yes--hopefully!"

"We do not know what to anticipate."

The statistical results regarding faculty status and trends and supporting comments are strong indications of the phenomenal growth the information systems area is experiencing which parallels with the tremendous demand for qualified faculty in the area. Tables XXV and XXVI summarize the results concerning faculty position openings and the hiring of additional faculty, respectively.

Comparison of Selected Items in the Study Instrument

Statistics for two-way tables were utilized in comparing various items in the questionnaire. The chi-square test for significance was computed for each of the comparisons. The .05 level of significance has been selected for this study.

Each of the programming languages introduced in the introductory information systems course were compared with the type of computer used in the introductory course. Responses to item nine, enrollment size, were combined and divided into three groups: small, medium, and large. Enrollment size, according to classification, was compared with the

TABLE XXV

FACULTY POSITION OPENING(S) IN THE INFORMATION SYSTEMS AREA

Opening(s) in Information Systems	Frequency	Cum. Freq.	Percent	Cum. Percent
Yes	84	84	70.59	70.59
No	35	119	29.41	100.00
Did Not Respond	53	172	-	-

TABLE XXVI

EMPLOYMENT OF ADDITIONAL FACULTY IN
THE INFORMATION SYSTEMS AREA
WITHIN THE NEXT TWO YEARS

Employment of Additional Faculty	Frequency	Cum. Freq.	Percent	Cum. Percent
Yes	55	55	46.22	46.22
No	64	119	53.78	100.00
Did Not Respond	53	172	-	-

status of information systems degree programs in AACSB-accredited institutions. Further comparisons were made between college of business enrollment size and average enrollment per section of the introductory course in information systems.

Comparison of Computer Usage by Programming Language

The relationships which were investigated between specific programming languages and computer usage in the introductory information systems course are presented in statistical tables in Appendix C. Statistical data for each comparison are shown utilizing two-way tables with each cell containing information in the following sequence: Observed frequency, expected frequency, cell chi-square, percent, row percent, and column percent. Row and column totals and percentages are presented as well as the results of chi-square tests and significance levels.

BASIC. Comparison tests of type of computer utilized usage by BASIC programming language disclose that 72.22 percent of the respondents using a centrally located computer(s) and mini-micro computer(s) also offer BASIC in their introductory course. Moreover, one-hundred percent of the institutions using mini-micro computer(s) exclusively, offer BASIC as a programming language in the introductory course in information systems. Because of the interactive nature of the language, mini-micro computers are probably utilized more with BASIC than any other programming language. Although BASIC accounts for a major percentage of AACSB language coverage in the introductory course, the advent of mini-micro computers in educational, business, and home environments should boost this language above all others as an introductory course programming

language. The chi-square test for significance reveals that there is a significant difference at the .05 level between the different types of computers utilized by those respondents offering BASIC. This significance was not apparent, however, at the .01 level of significance. Table XXVII in Appendix C gives a complete summary of the results.

COBOL. According to the two-way table presenting computer usage and COBOL comparison, zero respondents introduced the COBOL language in their introductory course without the use of a computer. Furthermore, 62.50 percent of the institutions offering COBOL, use a centrally located computer exclusively, while 31.25 percent of the respondents indicating COBOL was introduced in their core course, utilize both a centrally located computer(s) and mini-micro computer(s). Statistical tests for significance show that there is no significant difference in the different computer usages for those teaching COBOL. However, only 6.25 percent of the respondents offering COBOL utilize mini-micro computers exclusively. Although these results are inconclusive, limited primary storage capacity of mini-micro computers is a major factor in COBOL computer usage. Table XXVII in Appendix C summarizes the statistical data for type of computer usage and COBOL programming language comparison.

FORTRAN. Over seventy percent of the institutions who indicated that both a centrally located computer(s) and mini-micro computer(s) were used for their introductory course did not offer FORTRAN as a language in their core course. However, over two-thirds of the respondents indicating that FORTRAN is introduced in the introductory course in information systems also indicated that a centrally located computer(s) was used exclusively. Only 1.79 percent of the participants including FORTRAN as a programming language in their introductory course used only mini-micro

computer(s). As indicated in Table XXIX, shown in Appendix C, there was no significant difference at the .05 or .01 level between the various types of computers used by institutions employing FORTRAN in their introductory course.

PASCAL. Seventy percent of the participants offering PASCAL utilize a centrally located computer exclusively for their introductory programming. Twenty percent indicated that both a centrally located computer(s) and mini-micro computer(s) were utilized, while ten percent of the institutions offering PASCAL in their core course use only mini-micro computer(s) for programming. Statistical results show no significant difference in comparing the two categories: type of computer usage by PASCAL programming language. Table XXX, Appendix C, gives a complete summary of the results.

PL/1. Only eight respondents indicated that PL/1 was introduced in their introductory coures. Three-fourths, or 75 percent of the institutions offering PL/1, utilize a centrally located computer exclusively, while 25 percent use both a centrally located computer(s) and mini-micro computer(s). All institutions offering PL/1 in the introductory course in information systems utilized a computer for programming, however, none of these institutions used mini-micro computers exclusively. The chi-square test indicated no significant difference within the comparisons made, however, due to the low response rate of PL/1, the table is so sparse that chi-square may not be a valid test. Results of this comparison are shown in Appendix C, Table XXXI.

RPG/RPG II. Only two institutions introduce RPG in the introductory course in information systems. Both of these institutions indicated that

a centrally located computer is used exclusively for programming. Because of the low response to RPG, the chi-square test for significance is inconclusive. Results are summarized in Table XXXII presented in Appendix C.

"Other" Programming Languages. Over one-half of the institutions indicating that programming languages were utilized other than those listed on the questionnaire use a centrally located computer(s) exclusively. More than one-fourth, or 28.57 percent, of these institutions use both a centrally located computer(s) and mini-micro computer(s), while 14.29 percent do not use a computer for programming. None of the institutions using other languages utilized mini-micro computers exclusively. The chi-square test for significance reveals a significant difference at the .01 and .05 level between various categories of the usage of computers and other languages used in the introductory course. Various languages included in the "other" category make it difficult to reach consistent conclusions regarding this comparison. Table XXXIII shown in Appendix C presents a statistical summary of the results.

Comparison of College of Business Enrollment Size by Status of Information Systems Programs

For purposes of comparison, enrollment size was regrouped into three categories. Educational institutions with 1,600 undergraduate students or fewer in the college of business were considered small; institutions with 1,601 or more undergraduate students in the college of business but fewer than 3,200 were considered medium; and institutions with 3,201 or more undergraduate students in the college of business were considered large.

Over one-half, or 50.67 percent, of the institutions responding which were classified as "small" offered a degree program or major emphasis in

the information systems area. Twenty-four percent of the small institutions responding did not have a degree program or major emphasis in information systems, however, plan to implement one within the next two years. Approximately one-fourth of the institutions classified as "small" do not currently have a degree program or major area of emphasis in information systems, and do not plan to implement such a program in the near future. Over one-half, or 61.82 percent, of the medium-sized institutions offer a degree program or major emphasis in information systems, while nearly three fourths, or 73.17 percent, of the large institutions offer a degree program or major area of emphasis in the information systems area. Over 21 percent of the medium-sized institutions plan to implement an information systems program within the next two years, while 16.36 percent do not currently have a program and do not plan to implement one in the next few years. Approximately 17 percent of the large institutions responding do not currently have an information systems program, however, plan to implement such a program in the near future. Less than ten percent of the large institutions do not currently have a degree program or major emphasis in the information systems area and do not plan to implement one within the next three years. Statistical data from institutions indicating that a degree program or major area of emphasis in information systems is offered were distributed fairly evenly between small, medium, and large institutions, encompassing 37.25, 33.33, and 29.41 percent respectively. Statistics reveal that a larger percentage of small institutions do not offer or have plans to implement a degree program or major area of emphasis in information systems than than medium or large institutions. Similarly, small and medium sized institutions are less likely to have a degree program in information systems than large institutions. Although

these results are prevalent, the chi-square test for significance reveals that there is no significant difference at the .05 level between the size of institution and status of information systems degree program. A complete summary of the results may be seen in Table XXXIV, Appendix C.

Comparison of College of Business Enrollment Size by Average Enrollment per Section in the Introductory Course

Regardless of the college of business enrollment size, a majority of the educational institutions responding had introductory information processing classes with 60 students or less. Percentages were distributed fairly equally with 44.44 percent of the small institutions, 43.64 percent of the medium institutions, and 41.46 percent of the large institutions indicating an average enrollment per section of 21-40 students. Approximately one-third of the small, medium, and large institutions indicated an average enrollment per section of the introductory information processing course of 41-60 students. Other percentages are not significantly different to warrant special consideration. Statistical comparisons reveal that the enrollment size of the university is not a significant factor in average enrollment per section of an individual course. The chi-square test for significance also indicated that there was no significant difference in comparing the college of business enrollment size with the average enrollment per section of the introductory course in information systems. Results are summarized in Table XXXV shown in Appendix C.

Summary

This chapter has presented a detailed analysis of the results from the study instrument. The analysis of the data obtained from the questionnaire was divided into four sections: an analysis of the introductory or core course offered by AACSB-accredited institutions in information systems; an analysis of the extent to which AACSB-accredited institutions offer degree programs in information systems and courses offered within these programs; faculty status and trends in information systems programs at AACSB-accredited institutions; and comparisons of various items included in the study instrument.

The results from each item were tabulated and reported according to frequency of occurence, accumulative frequency, percentage, and accumulative percentage. Two-way tables and the chi-square test for significance were utilized in comparing and revealing relationships between selected items in the study instrument. Specific results were summarized and presented through discussion and various tables within the chapter and Appendix C.

The summary, conclusions, and recommendations are presented in Chapter V.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

As technology advances rapidly and computer utilization becomes an integral part of our lives, educators in the information systems area must change to meet the demands of business. Modern technology has created the educational revolution that is now being witnessed, as the information systems community continually asks for more and better qualified personnel. The phenomenal development of computer technology has created a tremendous demand for competent information processing personnel, therby creating increasingly large enrollments in the information systems area. These enrollments have put information systems instructors in a position of great responsbility and high demand. It is imperative that a serious look be taken at the current curriculum offerings in the information systems area to further insure quality education.

Purpose and Design of the Study

The purpose of this study was to provide information stating the extent to which American Assembly of Collegiate Schools of Business (AACSB) accredited business programs offer a degree in the information systems area, the courses offered in the degree program, an in-depth study of the introductory or core course in information processing, and faculty status and trends in the information systems area. This was accomplished through an interpretative analysis of data obtained from

questionnaires which were mailed to AACSB-accredited domestic educational institutions. By comparing some of the data from the study, it was possible to reveal the uniformity and diversification among the various educational institutions.

The Study Instrument

In keeping with the purpose of this study concerning information systems programs in AACSB educational institutions, a four-page printed questionnaire (8 1/2 by 11 inches) was designed. The questionnaire formulated to elicit data for this study was designed from a study of the literature, other research questionnaires concerned with information systems degree programs, and interviews and consultation with Oklahoma State Universtiy faculty members. In the fall of 1981, this questionnaire was mailed to all of the 214 AACSB-accredited domestic educational institutions. More than four-fifths, or 80.4 percent, participated by responding to and returning the questionnaire.

Analysis of the Data

All responses to the questionnaire were coded and analyzed with the aid of computer tabulations. Frequency counts and percentage relationships contributed to analyzations of the descriptive data while two-way tables and chi-square tests were utilized to analyze the comparison of selected items in the study instrument.

Related Literature

The approach taken in this study for the review of related literature was to research those areas which have a direct impact on information systems programs in educational institutions: (1) the impact

that computer technology has had on educational institutions, business and industry, and the lives of persons functioning in each of these areas, (2) the demand for information systems programs and qualified personnel in this area, and (3) curriculum implications in information systems programs.

As presented in the review of related literature, computer technology has had a tremendous impact on society and the trend toward increased computer usage is projected to continue through future decades.

Because of the tremendous impact computers have had on society and the rapid pace at which computerized businesses are advancing, there is an overwhelming demand for better educated, more qualified personnel. This demand places strength and responsibility on educators in the information systems area. Review of the literature revealed widespread agreement among business people and educators that information systems degree programs should be housed in the school of business and should provide students with technical, business, and organizational skills.

Uniformity and standardization of curriculum has not been established for educational institutions offering information systems degree programs. Only recently has a model curriculum for this area been developed. These curriculum guidelines, developed by the Data Processing Management Association Education Foundation, should introduce some much needed uniformity to the U.S. business information systems education.

This study further extends knowledge of information systems education by reporting in detail the status and trends of information systems programs in accredited schools of business.

Results of the Study

The findings of the study are summarized in four sections according to (1) the introductory or core course in information systems, (2) status of information systems degree programs, (3) faculty status and trends in the information systems area, and (4) comparison of selected items in the study instrument.

Introductory Course in Information Systems

Approximately three-fourths of the 172 participants responding utilized one of the five course titles listed on the study instrument for their introductory course in information systems. Over 40 percent entitled their course either "Introduction to Data Processing" or "Introduction to Information Systems." Slightly more than one-fourth of the respondents used a course title other than those listed on the questionnaire.

Over 40 percent of the participants indicated that their introductory course was offered at the sophomore level, while the freshman and junior levels were responded to by approximately 27 percent and 20 percent of the respondents respectively.

Educational institutions seem to be very consistent in the amount of credit hours granted for the introductory course with over three-fourths of the respondents indicating that the course was offered for three semester hours or equivalent.

Approximately 12 percent of the institutions responding offer graduate credit for their introductory course, however, some indicated that a separate introductory course is offered at the graduate level.

More than one-fourth of the AACSB-accredited institutions responding

introduce two or more programming languages in their introductory course. Approximately two-thirds of the institutions introduce BASIC, with FORTRAN and COBOL being the next two popular programming languages introduced in the introductory course in information systems.

Over one-half of the participating institutions utilize a centrally located computer exclusively, while slightly less than one-third use both a centrally located computer(s) and mini-micro computer(s). Approximately five percent indicated that mini-micro computers were used exclusively. Only three respondents, or 1.77 percent, indicated that no computer was utilized in the introductory course.

None of the AACSB-institutions responding had 20 students or less in their introductory course, however, over 40 percent of the participants indicated that their introductory course had an average enrollment per section which ranged from 21-40 students.

Seven institutions included in the survey offered only one section of the introductory course per semester, while 90 institutions, or over 50 percent, offered from 2-7 sections per semester. Over 40 percent of the respondents indicated that more than eight sections were offered per semester.

There were a wide range of enrollment figures in the colleges of business responding. Ranging from zero to 11,500, one-half of the institutions specified enrollment of 2000 or more. These enrollment figures were regrouped into three groups of small, medium, and large for purposes of comparison.

This study revealed that a wide variety of texts are utilized by AACSB-accredited institutions in the introductory course with 67 different textbooks being used by the 162 institutions responding to this question. Over one-half of the institutions responding used a text other

than those listed on the questionnaire. The two most popular texts for the introductory information systems course are Shelly and Cashman, Introduction to Computers and Data Processing, and Mandell, Computers and Data Processing with BASIC.

Answers were somewhat consistent on the portion of the questionnaire regarding topics. Approximately three-fourths of the participating institutions devote from zero to ten percent of the semester on the history of information processing and computers, while over two-thirds devote from zero to 20 percent of the semester on the introduction to computer systems. More than one-half of the educational institutions responding indicated that from 21 to 50 percent of the semester was devoted to programming languages, while 80 percent devote from zero to 30 percent of the semester on information processing applications in business. Over two-thirds of the institutions responding devote from zero to 20 percent of the semester on systems analysis. Similarly, over 60 percent of the respondents indicated that from zero to 20 percent of their time was devoted to Management Information Systems. Approximately four-fifths of the respondents indicated that they did not include topics other than those listed on the questionnaire.

Degree Programs in Information Systems

Nearly 60 percent of the institutions participating in the study offer a degree program or major emphasis in the information systems area. Over 20 percent indicated that they do not currently have a degree program or major emphasis but plan to implement one within the next three years, while less than 20 percent do not currently have or plan to implement a degree program in the information systems area within the next three years.

The four most frequently offered courses by institutions wtih a degree program or major area of emphasis in information systems are Systems Design and Analysis I, Applications Program Development I-COBOL, Data Base Concepts, and Introduction to Information Processing. Each of these courses were offered by over 60 percent of the institutions responding.

Applications Program Development II-COBOL is offered by nearly one-half of the institutions with degree programs responding while FORTRAN is offered by less than one-third of the participating AACSB-accredited business programs.

Management Information Systems is offered by more than one-half of the institutions responding, while approximately one-third include Management of Information Processing, Systems Design and Analysis II and/or Data Structures and Information Retrieval in their program.

Slightly more than one-third of the participating institutions offer courses which were not listed on the study instrument.

Status and Trends of Faculty in Information Systems

The participating AACSB-accredited institutions with degree programs or a major area of emphasis in the information systems area employ from one to 30 full-time faculty, however, 80 percent of these institutions employ from one to six full-time faculty in the information systems area. Part-time faculty employed in the information systems area range from zero to 24, with over 60 percent of the respondents indicating that from zero to three part-time faculty are employed.

Over 60 percent of the respondents indicated that they had hired faculty in the information systems area within the last two years, over

70 percent have one or more faculty position openings, and 46 percent anticipate hiring additional faculty within the next two years. These statistics are a strong indication of the phenomenal growth in the information systems area which has created a tremendous demand for faculty.

Comparison of Selected Items in the Study Instrument

Comparison of programming languages and type of computer utilized revealed that over 70 percent of the respondents using a centrally located computer(s) and mini-micro computer(s) also offer BASIC in their introductory course. One-hundred percent of the institutions using mini-micro computers exclusively, offer BASIC in their introductory course. Because of the interactive nature of the BASIC programming language and limited internal memory, mini-micro computers are utilized to a great extent with BASIC.

A majority of the respondents indicated that COBOL, FORTRAN, PASCAL, PL/1, and RPG was taught using a centrally located computer exclusively.

Over one-half of the institutions indicating that other programming languages are introduced in the introductory course use a centrally located computer(s) exclusively, while none of these institutions utilize exclusively mini-micro computers.

College of Business enrollment size grouped into categories of small, medium, and large were compared with the status of information systems degree programs. The statistics from this comparison reveal that a larger percentage of small institutions do not offer or have plans to implement a degree program or major area of emphasis in the information systems area. Only 9.76 percent of the large institutions do not have nor

plan to implement a degree program in information systems within the next three years.

Results from the comparison of college of business enrollment size by average enrollment per section in the introductory course disclose that the enrollment size of the university is not a significant factor in determining the average enrollment per section of an individual course.

Conclusions and Recommendations

The following conclusions and recommendations are based on the results of the descriptive analysis of information systems programs in AACSB-accredited institutions and on the review of related literature.

1. A high percentage of large AACSB-accredited institutions have a degree program or major area of emphasis in information systems. Large institutions are more likely to have a degree program than medium or small institutions.

2. More small AACSB-accredited educational institutions do not offer or have plans to implement a degree program or major area of emphasis in information systems than medium or large institutions.

3. Medium-sized institutions are more likely to have a degree program or major area of emphasis in information systems than small institutions.

4. A centrally located computer is utilized by a majority of AACSB-accredited institutions in introducing all programming languages except BASIC in the introductory information systems course. Institutions introducing BASIC in the introductory course utilized either mini-micro computers exclusively or a centrally located computer(s) and mini-micro computer(s). Since BASIC is the primary language introduced in the introductory course and mini-micro computers are being increasingly

utilized in society, information systems educators should advocate increased usage of mini-micro computers for teaching programming concepts.

5. College of business enrollment size is not a significant factor in determining average enrollment per section of an introductory course in information systems. Large enrollments tend to create more sections per semester, rather than larger enrollments per section.

6. A tremendous demand for qualified information systems faculty exists. Results indicate that this demand exceeds the supply. Graduate programs are needed to prepare instructors in this area and salaries may need to be adjusted to compete with those offered by business.

7. Review of related literature indicates that business and industry need graduates from information systems programs housed in the school of business. Although the majority of the participating AACSB institutions currently offer a degree program or major area of emphasis in information systems, a large percentage still do not have such a program. It is recommended that information systems programs should be developed and implemented in colleges of business to meet the increasing demands that modern technology has created.

Recommendations for Future Research

1. Studies similar to this one should be made in the future in order to obtain information in comparing and evaluating changes made in information systems degree programs in response to changing technology.

2. Studies of computerized businesses and industries are needed to determine personnel requirements of graduates in the information systems area. The results would provide an approach to evaluation of information systems programs in educational institutions.

3. In-depth studies of individual courses in information systems programs are needed to determine status and trends of course content, course titles, textbooks utilized, level of course, and other relevant information about the course.

4. Studies of personnel in the information systems area, their position requirements and their task-related activities should be undertaken to obtain information for evaluation and development of curriculum in the information systems area.

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APPENDIX A

STUDY INSTRUMENT

Identification Number

QUESTIONNAIRE ON INFORMATION SYSTEMS PROGRAMS

This questionnaire is a survey of AACSB-accredited business programs to determine status and trends of information systems degree programs offered by educational institutions. Please complete the questionnaire by checking (✓) the appropriate response.

I. INTRODUCTORY OR CORE COURSE

This portion of the questionnaire pertains to the core course that meets the computer related course requirement offered by institutions accredited by AACSB.

1. Identify the course title that most closely approximates the title of your core or introductory course in information systems.

   (1)_____Introduction to Data Processing
   (2)_____Introduction to Information Processing
   (3)_____Business Data Processing Concepts
   (4)_____Introduction to Information Systems
   (5)_____Introduction to Computer-Based Systems
   (6)_____Other (Please Specify)_____

2. What level of course is your introductory course in information systems?

   (1)_____Freshman
   (2)_____Sophomore
   (3)_____Junior
   (4)_____Senior

3. How many hours credit is granted for your introductory course?

   (1)_____2 semester hours or equivalent
   (2)_____3 semester hours or equivalent
   (3)_____4 semester hours or equivalent
   (4)_____Other (Please Specify)_____

4. Do you allow graduate credit for your introduction to information processing course?

   (1)_____Yes
   (2)_____No

5. Please indicate the programming language(s) taught in your introductory information processing course. (Check all that apply)

   (1)_____BASIC
   (2)_____COBOL
   (3)_____FORTRAN
   (4)_____PASCAL
   (5)_____PL/1
   (6)_____RPG/RPG II
   (7)_____Other (Please Specify)_____

6. Please indicate the appropriate response concerning the use of computers in your introductory class.

(1)____Students do not use a computer.
(2)____Students use both a centrally located computer(s) and mini-micro computer(s).
(3)____Students use a centrally located computer(s).
(4)____Students use mini-micro computer(s).

7. Please indicate the average enrollment in each section of an introduction to information processing class at your university.

(1)____20 students or less
(2)____21-40 students
(3)____41-60 students
(4)____61-80 students
(5)____81-100 students
(6)____101-120 students
(7)____121-140 students
(8)____141 students or more
(9)____Other (Comments)_____

8. Please indicate the number of sections of introduction to information processing classes offered at your university per academic semester.

(1)____1 section
(2)____2-4 sections
(3)____5-7 sections
(4)____8-10 sections
(5)____11-13 sections
(6)____14-16 sections
(7)____17-19 sections
(8)____20 sections or more (Please Specify)_____

9. What is the approximate total enrollment of undergraduate students in the college of business at your university?

(1)_____

10. What basic textbook are you using in your course this year?

(1)____Awad, Introduction to Computers in Business
(2)____Bohl, Information Processing
(3)____Couger and McFadden, First Course in Data Processing
(4)____Davis, Computers and Information Processing
(5)____Dock and Essick, Principles of Business Data Processing
(6)____Elliott, Introduction to Data Processing
(7)____Feingold, Introduction to Data Processing
(8)____Mandell, Computers and Data Processing With BASIC
(9)____Murach, Business Data Processing
(10)____Sanders, Computers in Business
(11)____Shelly and Cashman, Introduction to Computers and Data Processing
(12)____Silver and Silver, Data Processing for Business
(13)____Spencer, Introduction to Information Processing
(14)____Stern and Stern, Principles of Data Processing
(15)____Other (Please specify author and title)_____

_____

11. Below is a list of topics frequently taught in an introductory information processing course. If you do not include a specific topic listed, please indicate in the appropriate block. Otherwise, please identify with a check mark (✓) the approximate percentage devoted to each topic. (Percentages should total 100%)

	Do Not Include	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
History of Infor. Proc. & Computers											
Introduction to Computer Systems (Input, Output, Processing, etc.)											
Programming Languages (COBOL, FORTRAN, BASIC, etc.)											
Information Proc. Applications in Business											
Systems Analysis											
Management Information Systems											
Other_____ _____											

II. INFORMATION SYSTEMS DEGREE PROGRAM

Please check (✓) the following statement which most accurately reflects the status of Information Systems at your institution.

(1)____Information Systems degree program or a major emphasis within this area is offered in the College of Business at our institution.

(2)____No degree program is offered, however, we plan to implement an Information Systems degree program or major emphasis within this area in the College of Business within the next three years.

(3)____No degree program or major emphasis in Information Systems is offered, nor do we plan to implement such a program in the College of Business within the next three years.

If #1 is checked, please complete and return the questionnaire. Otherwise, please return the questionnaire now.

1. Please indicate which of the following course titles most closely approximates those included in your information systems program. (Check all that apply)

(1)_____Introduction to Information Processing (Data Processing)
(2)_____Applications Program Development I - COBOL
(3)_____Applications Program Development II - COBOL
(4)_____Systems Design and Analysis I
(5)_____Systems Design and Analysis II
(6)_____Data Base Concepts
(7)_____FORTRAN
(8)_____Applied Software Development
(9)_____Distributed Data Processing
(10)_____Information Resource Management
(11)_____Data Communication Systems
(12)_____Management of Information Processing
(13)_____EDP Auditing
(14)_____Data Processing Law
(15)_____Assembly Language Programming
(16)_____Small Computer Software Development
(17)_____Management Information Systems
(18)_____Programming Minicomputers/Microcomputers for Business
(19)_____Data Structures and Information Retrieval
(20)_____Other(s) (Please Specify)_____

_____

III. FACULTY

1. Please indicate the number of full-time faculty in the information systems area.

(1)_____1
(2)_____2
(3)_____3
(4)_____4
(5)_____5
(6)_____Other (Please Specify)_____

2. Please indicate the number of part-time faculty and/or graduate assistants teaching in the information systems area.

(1)_____0
(2)_____1
(3)_____2
(4)_____3
(5)_____4
(6)_____Other (Please Specify)_____

3. Have you hired faculty in the information systems area within the last two years?

(1)_____Yes
(2)_____No

4. Do you currently have an opening for a faculty position in information systems?

(1)_____Yes
(2)_____No

5. Do you anticipate employing additional faculty within the next two years in the information systems area?

(1)_____Yes
(2)_____No

RETURN TO: JERETTA AULGUR
COLLEGE OF BUSINESS ADMINISTRATION
OKLAHOMA STATE UNIVERSITY
STILLWATER, OK 74078

APPENDIX B

CORRESPONDENCE TO DEANS OF AACSB-ACCREDITED INSTITUTIONS

Oklahoma State University

COLLEGE OF BUSINESS ADMINISTRATION

STILLWATER, OKLAHOMA 74078
(405) 624-5064

September 28, 1981

Dear Dean:

SUBJECT: INFORMATION SYSTEMS SURVEY OF AACSB-ACCREDITED SCHOOLS OF BUSINESS

Course offerings, course content, and related data in the information systems area are of concern to all of us as practicing professionals. I am writing to request your assistance in a national survey of AACSB-accredited educational institutions. It is the purpose of this study to collect data which will provide insight into important issues concerning information systems degree programs, with a specific emphasis on the introductory or core course in information systems. For purposes of this study, information systems and data processing are used synonymously.

Would you, as dean of the college of business, participate in this project by forwarding the enclosed questionnaire along with this letter to the appropriate professor or instructor, encouraging that individual to complete and return the questionnaire. If possible, the questionnaire should be returned on or before November 1. An addressed, postage-paid envelope is enclosed for convenience in returning the questionnaire.

Research findings from this study should benefit business curriculum planners in their continuing effort toward more effective education. Please indicate if you wish to have an abstract of the completed research. I would like to express a sincere "thank you" for taking a few minutes from your schedule to provide your professional expertise, thereby contributing to this study.

Sincerely,

Jeretta Aulgur

Jeretta Aulgur
Graduate Teaching Associate

Herbert Jelley

Herbert Jelley
Doctoral Committee Chairman

Enclosures

Oklahoma State University

COLLEGE OF BUSINESS ADMINISTRATION

STILLWATER, OKLAHOMA 74078
(405) 624-5064

November 9, 1981

Dear Dean:

SUBJECT: FOLLOW-UP OF INFORMATION SYSTEMS SURVEY

Recently you received a questionnaire requesting responses concerning the information systems area at your institution. This is a national survey of AACSB-accredited educational institutions. At the time this letter was mailed, a response had not been received from your university. If the questionnaire has since been completed and returned, I sincerely thank you.

Would you, as dean of the college of business, participate in this project by forwarding the enclosed questionnaire along with this letter to the appropriate professor or instructor, encouraging that individual to complete and return the questionnaire. If possible, the questionnaire should be returned on or before December 1. An addressed, postage-paid envelope is enclosed for convenience in returning the questionnaire.

Your assistance in providing your professional expertise, thereby contributing to this study is greatly appreciated.

Sincerely,

Jeretta Aulgur
Graduate Teaching Associate

G. Daryl Nord
Doctoral Dissertation Adviser

Enclosures

APPENDIX C

RESULTS OF COMPARISON TESTS OF SELECTED ITEMS IN THE STUDY INSTRUMENT

TABLE XXVII

COMPARISON OF COMPUTER USAGE BY BASIC PROGRAMMING LANGUAGE

Computer Usage	BASIC No	BASIC Yes	Total
Students do not use a Computer			
Observed Frequency	2	1	3
Expected Frequency	1.1	1.9	
Percent	1.18	0.59	1.78
Row Percent	66.67	33.33	
Column Percent	3.33	0.92	
Students use a Centrally Located Computer(s) and Mini-Micro Computer(s)			
Observed Frequency	15	39	54
Expected Frequency	19.2	34.8	
Percent	8.88	23.08	31.95
Row Percent	27.78	72.22	
Column Percent	25.00	35.78	
Students use a Centrally Located Computer			
Observed Frequency	43	60	103
Expected Frequency	36.6	66.4	
Percent	25.44	35.50	60.95
Row Percent	41.75	58.25	
Column Percent	71.67	55.05	
Students use Mini-Micro Computers			
Observed Frequency	0	9	9
Expected Frequency	3.2	5.8	
Percent	0.00	5.33	5.33
Row Percent	0.00	100.00	
Column Percent	0.00	8.26	
Chi square and significance level — Total	60	109	169
	35.50	64.50	100.00

9.39 $p < .05$ $p > .01$

TABLE XXVIII

COMPARISON OF COMPUTER USAGE BY COBOL PROGRAMMING LANGUAGE

Computer Usage	COBOL No	COBOL Yes	Total
Students do not use a Computer			
Observed Frequency	3	0	3
Expected Frequency	2.4	0.6	
Percent	1.78	0.00	1.78
Row Percent	100.00	0.00	
Column Percent	2.19	0.00	
Students use a Centrally Located Computer(s) and Mini-Micro Computer(s)			
Observed Frequency	44	10	54
Expected Frequency	43.8	10.2	
Percent	26.04	5.92	31.95
Row Percent	81.48	18.52	
Column Percent	32.12	31.25	
Students use a Centrally Located Computer			
Observed Frequency	83	20	103
Expected Frequency	83.5	19.5	
Percent	49.11	11.83	60.95
Row Percent	80.58	19.42	
Column Percent	60.58	62.50	
Students use Mini-Micro Computers			
Observed Frequency	7	2	9
Expected Frequency	7.3	1.7	
Percent	4.14	1.18	5.33
Row Percent	77.78	22.22	
Column Percent	5.11	6.25	
Total	137	32	169
	81.07	18.93	100.00

Chi-square and significance level

0.79 $p > .05$ $p > .01$

TABLE XXIX

COMPARISON OF COMPUTER USAGE BY FORTRAN PROGRAMMING LANGUAGE

Computer Usage	FORTRAN No	FORTRAN Yes	Total
Students do not use a Computer			
Observed Frequency	3	0	3
Expected Frequency	2.0	1.0	
Percent	1.78	0.00	1.78
Row Percent	100.00	0.00	
Column Percent	2.65	0.00	
Students use a Centrally Located Computer(s) and Mini-Micro Computer(s)			
Observed Frequency	38	16	54
Expected Frequency	36.1	17.9	
Percent	22.49	9.47	31.95
Row Percent	70.37	29.63	
Column Percent	33.63	28.57	
Students use a Centrally Located Computer			
Observed Frequency	64	39	103
Expected Frequency	68.9	34.1	
Percent	37.87	23.08	60.95
Row Percent	62.14	37.86	
Column Percent	56.64	69.64	
Students use Mini-Micro Computers			
Observed Frequency	8	1	9
Expected Frequency	6.0	3.0	
Percent	4.73	0.59	5.33
Row Percent	88.89	11.11	
Column Percent	7.08	1.79	
Chi-square and significance Total	113	56	169
level	66.86	33.14	100.00

4.80 $p > .05$ $p > .01$

TABLE XXX

COMPARISON OF COMPUTER USAGE BY PASCAL PROGRAMMING LANGUAGE

Computer Usage	PASCAL No	PASCAL Yes	Total
Students do not use a Computer			
Observed Frequency	3	0	3
Expected Frequency	2.8	0.2	
Percent	1.78	0.00	1.78
Row Percent	100.00	0.00	
Column Percent	1.89	0.00	
Students use a Centrally Located Computer(s) and Mini-Micro Computer(s)			
Observed Frequency	52	2	54
Expected Frequency	50.8	3.2	
Percent	30.77	1.18	31.95
Row Percent	96.30	3.70	
Column Percent	32.70	20.00	
Students use a Centrally Located Computer			
Observed Frequency	96	7	103
Expected Frequency	96.9	6.1	
Percent	56.80	4.14	60.95
Row Percent	93.20	6.80	
Column Percent	60.38	70.00	
Students use Mini-Micro Computers			
Observed Frequency	8	1	9
Expected Frequency	8.5	0.5	
Percent	4.73	0.59	5.33
Row Percent	88.89	11.11	
Column Percent	5.03	10.00	
Chi-square and significance Total	159	10	169
level	94.08	5.92	100.00

1.24 $p > .05$ $p > .01$

TABLE XXXI

COMPARISON OF COMPUTER USAGE BY PL/1 PROGRAMMING LANGUAGE

Computer Usage		PL/1 No	PL/1 Yes	Total
Students do not use a Computer				
	Observed Frequency	3	0	3
	Expected Frequency	2.9	0.1	
	Percent	1.78	0.00	1.78
	Row Percent	100.00	0.00	
	Column Percent	1.86	0.00	
Students use a Centrally Located Computer(s) and Mini-Micro Computer(s)				
	Observed Frequency	52	2	54
	Expected Frequency	51.4	2.6	
	Percent	30.77	1.18	31.95
	Row Percent	96.30	3.70	
	Column Percent	32.30	25.00	
Students use a Centrally Located Computer				
	Observed Frequency	97	6	103
	Expected Frequency	98.1	4.9	
	Percent	57.40	3.55	60.95
	Row Percent	94.17	5.83	
	Column Percent	60.25	75.00	
Students use Mini-Micro Computers				
	Observed Frequency	9	0	9
	Expected Frequency	8.6	0.4	
	Percent	5.33	0.00	5.33
	Row Percent	100.00	0.00	
	Column Percent	5.59	0.00	
Chi-square and significance level	Total	161	8	169
		95.27	4.73	100.00

0.99 $p > .05$ $p > .01$

TABLE XXXII

COMPARISON OF COMPUTER USAGE BY RPG/RPG II PROGRAMMING LANGUAGE

Computer Usage	RPG/RPG II No	RPG/RPG II Yes	Total
Students do not use a Computer			
Observed Frequency	3	0	3
Expected Frequency	3.0	0.0	
Percent	1.78	0.00	1.78
Row Percent	100.00	0.00	
Column Percent	1.80	0.00	
Students use a Centrally Located Computer(s) and Mini-Micro Computer(s)			
Observed Frequency	54	0	54
Expected Frequency	53.4	0.6	
Percent	31.95	0.00	31.95
Row Percent	100.00	0.00	
Column Percent	32.34	0.00	
Students use a Centrally Located Computer			
Observed Frequency	101	2	103
Expected Frequency	101.8	1.2	
Percent	59.76	1.18	60.95
Row Percent	98.06	1.94	
Column Percent	60.48	100.00	
Students use Mini-Micro Computers			
Observed Frequency	9	0	9
Expected Frequency	8.9	0.1	
Percent	5.33	0.00	5.33
Row Percent	100.00	0.00	
Column Percent	5.39	0.00	
Chi-square and significance Total	167	2	169
level	98.82	1.18	100.00

1.30 $p > .05$ $p > .01$

TABLE XXXIII

COMPARISON OF COMPUTER USAGE BY PROGRAMMING LANGUAGES NOT LISTED ON THE QUESTIONNAIRE BUT SPECIFIED UNDER 'OTHER'

Computer Usage	"OTHER" No	"OTHER" Yes	Total
Students do not use a Computer			
Observed Frequency	1	2	3
Expected Frequency	2.8	0.2	
Percent	0.59	1.18	1.78
Row Percent	33.33	66.67	
Column Percent	0.65	14.29	
Students use a Centrally Located Computer(s) and Mini-Micro Computer(s)			
Observed Frequency	50	4	54
Expected Frequency	49.5	4.5	
Percent	29.59	2.37	31.95
Row Percent	92.23	7.41	
Column Percent	32.26	28.57	
Students use a Centrally Located Computer			
Observed Frequency	95	8	103
Expected Frequency	94.5	8.5	
Percent	56.21	4.73	60.95
Row Percent	92.23	7.77	
Column Percent	61.29	57.14	
Students use Mini-Micro Computers			
Observed Frequency	9	0	9
Expected Frequency	8.3	0.7	
Percent	5.33	0.00	5.33
Row Percent	100.00	0.00	
Column Percent	5.81	0.00	
Chi-square and significance Total	155	14	169
level	91.72	8.28	100.00

14.36 $p < .05$ $p < .01$

TABLE XXXIV

COMPARISON OF COLLEGE OF BUSINESS ENROLLMENT SIZE
BY STATUS OF INFORMATION SYSTEMS PROGRAMS

Size of Institution	Degree Program or Major Emphasis in Information Systems	No Degree Program but Plan to Implement Within Three Years	No Degree Program and do not Plan to Implement Within Three Years	Total
Small				
Observed Frequency	38	18	19	75
Expected Frequency	44.7	16.2	14.0	
Percent	22.22	10.53	11.11	43.86
Row Percent	50.67	24.00	25.33	
Column Percent	37.25	48.65	59.38	
Medium				
Observed Frequency	34	12	9	55
Expected Frequency	32.8	11.9	10.3	
Percent	19.88	7.02	5.26	32.16
Row Percent	61.82	21.82	16.36	
Column Percent	33.33	32.43	28.13	
Large				
Observed Frequency	30	7	4	41
Expected Frequency	24.5	8.9	7.7	
Percent	17.54	4.09	2.34	23.98
Row Percent	73.17	17.07	9.76	
Column Percent	29.41	18.92	12.50	
Total	102	37	32	171
	59.65	21.64	18.71	100.00

Chi-square and significance level 6.58 $p > .05$ $p > .01$

TABLE XXXV

COMPARISON OF COLLEGE OF BUSINESS ENROLLMENT SIZE
BY AVERAGE ENROLLMENT PER SECTION IN THE
INTRODUCTORY COURSE

	Number of Students								
Size of Institution	21-40	41-60	61-80	81-100	101-120	121-140	141 or more	"Other"	Total
Small									
Observed Frequency	32	26	5	4	1	1	2	1	72
Expected Frequency	31.3	24.9	6.0	3.4	0.4	1.7	2.6	1.7	
Percent	19.05	15.48	2.98	2.38	0.60	0.60	1.19	0.60	42.86
Row Percent	44.44	36.11	6.94	5.56	1.39	1.39	2.78	1.39	
Column Percent	43.84	44.83	35.71	50.00	100.00	25.00	33.33	25.00	
Medium									
Observed Frequency	24	18	8	3	0	0	1	1	55
Expected Frequency	23.9	19.0	4.6	2.6	0.3	1.3	2.0	1.3	
Percent	14.29	10.71	4.76	1.79	0.0	0.00	0.60	0.60	32.74
Row Percent	43.64	32.73	14.55	5.45	0.0	0.00	1.82	1.82	
Column Percent	32.88	31.03	57.14	37.50	0.0	0.00	16.67	25.00	
Large									
Observed Frequency	17	14	1	1	0	3	3	2	41
Expected Frequency	17.8	14.2	3.4	2.0	0.2	1.0	1.5	1.0	
Percent	10.12	8.33	0.60	0.60	0.00	1.79	1.79	1.19	24.40
Row Percent	41.46	34.15	2.44	2.44	0.00	7.32	7.32	4.88	
Column Percent	23.29	24.14	7.14	12.50	0.00	50.00	75.00	50.00	
Total	73	58	14	8	1	4	6	4	168
	43.45	34.52	8.33	4.76	0.60	2.38	3.57	2.38	100.00

Chi-square and significance level 15.99 $p > .05$ $p > .01$

VITA

Jeretta Horn Aulgur

Candidate for the Degree of

Doctor of Education

Thesis: STATUS AND TRENDS OF INFORMATION SYSTEMS PROGRAMS IN ACCREDITED COLLEGIATE SCHOOLS OF BUSINESS

Major Field: Business Education

Biographical:

Personal Data: Born in Sherman, Texas, April 20, 1956, the daughter of Jerry Lawrence and Johnnell Elizabeth Horn.

Education: Graduated from Colbert High School, Colbert, Oklahoma, in May, 1974; received Bachelor of Science in Education degree in Business Education from Southeastern Oklahoma State University, Durant, Oklahoma, in 1977; received Master of Behavioral Studies in Business Education degree from Southeastern Oklahoma State University, Durant, Oklahoma, in 1979; completed requirements for the Doctor of Education degree at Oklahoma State University in May, 1982.

Professional Experience: Director of Admissions and Assistant Registrar, Office of Admissions and Enrollment, Southeastern Oklahoma State University, Durant, Oklahoma, 1977-80; evening instructor, Division of Business, Southeastern Oklahoma State University, Durant, Oklahoma, 1979-80; graduate teaching associate, College of Business, Oklahoma State University, 1980-82.

Professional Organizations: Association for Educational Data Systems, Society of Data Educators, Data Processing Management Association, Delta Pi Epsilon, National Business Education Association, Mountain-Plains Business Education Association, Oklahoma Business Education Association, Phi Delta Kappa.