

THE IMPORTANCE OF SELECTED CRITICAL  
ISSUES IN THE FIELD OF MANAGEMENT  
INFORMATION SYSTEMS AS PERCEIVED  
BY MIS MANAGERS AND  
MIS FACULTY

BY

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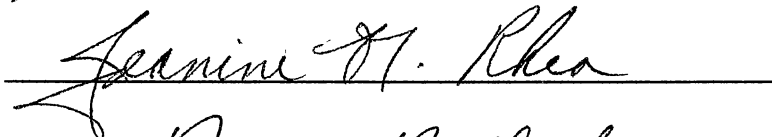
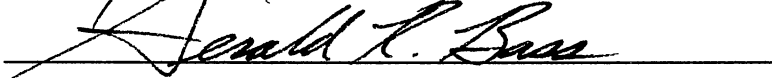
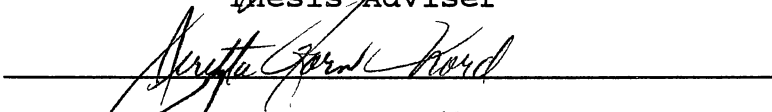
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## CHAPTER I

### THE RESEARCH PROBLEM

#### Background of the Study

As with any industry, the Management Information Systems (MIS) community must continually make decisions about which issues are the most critical. These critical issue decisions impact upon management decisions, industrial research funding, and educational research funding. They also have a direct impact on the type and nature of commitment that educational institutions place on curricula development and adoption. Dickson (1984) in his article entitled, "Key Information Systems Issues for the 1980's," said,

Organizations make judgments about importance when they fund research projects and establish conference themes and topics. Businesses and government agencies make resource decisions that affect their profitability and effectiveness. Many issues exist, but which are the most crucial (p. 135)?

And yet, in this same study Dickson (1984, p. 135) reported that a "widely accepted and current assessment of the important management issues for MIS does not exist."



The scope and purpose for information will necessarily differ from one organization to another depending upon the size and mission of the organization. In addition, other factors which will affect the organization's need for information, according to Rocart, Ball, and Bullen (1982, p. 6), are: the economy; the industry(ies) the organization serves; company size and organization structure; organization objectives; political forces within the organization; the organization's stage of I/S growth; and the personal and managerial attributes and skills of the current incumbent in the CIO position. This lack of consensus may be due, in part, to the relatively short span of time during which the field of MIS has existed.

The organization of and participation in professional groups committed to the exchange of ideas and concerns, increased excellence, and research in a particular field is but one indicator of the degree of maturity the field has achieved. When one considers the fact that the Society for Management Information Systems (SMIS), a leading professional organization in the field of MIS, has only been in existence for 12 years (Ball, 1982), the relative newness of this field becomes apparent and helps to explain why such a lack of consensus about the critical issues in the field of MIS possibly exists. Tyler (1986, p. 46) noted that only in the last two or three years have we seen scholarly MIS

journals, newsletters, conferences, or professional associations.

In addition, this is a time when competitive pressures are squeezing many organizations and forcing cuts of personnel and unproductive business units. The result is that MIS managers are shifting their horizons from technical management and planning to the business objectives defined by top corporate leadership (Herbert, 1986). Therefore, while the field may be relatively new, MIS management must closely monitor those critical and evolving issues which will provide their respective organizations with a maximum benefit from the overall dollar investment in the MIS area.

Hartog (1986) reports that the significant prior research found concerning MIS critical issues was found in three articles. These articles (Ball, 1982; Dickson, 1984; and Martin, 1985) all have one common thread. Each researcher delimited their sample of respondents to executives in the field of MIS. One of the most recent studies in the area of issues in MIS expanded this sample of respondents to include both MIS executives and general managers (Brancheau, 1987). While the inputs and opinions of these individuals is vitally important in determining which issues facing MIS management are the most critical, those individuals involved with educational research and teaching in this field must also be considered.

Professor Aravind Joshi, University of Pennsylvania, believes that a continuing interaction between university faculty and the people in industry is vital. In his opinion, industry-academic interaction must increase, but in a way that's tied to the long-range needs of industry rather than to the immediate needs (Hartog, 1985, p. 78). George R. Davis, Editor-in-Chief, Datamation (1987), states that information processing is increasingly being integrated into postgraduate business education. Nevertheless, the scope, purpose, and level of the training, when viewed against the backdrop of the real business world of tomorrow, is a long way from being satisfactory. The Data Processing Management Association (DPMA) Education Foundation recognized and began developing a model curriculum in information systems in 1979 (Aulgur, 1982). This curriculum is primarily targeted at the undergraduate level. Since this time, this organization's efforts have succeeded in some standardization of curricula offerings in the area of MIS. As yet, a similar method of integrating a standard MIS program into the postgraduate business curricula does not exist. On the importance of including MIS in MBA education, business schools still differ widely on implementation issues.

Because schools are structured differently -- with different monetary and political constraints -- their approaches to MIS vary greatly, just as their approaches to

functional areas like marketing or finance vary (Tyler, 1986, p. 47). With a variance in collegiate approaches to the integration of MIS into postgraduate business curricula, the importance of understanding and analyzing these varying approaches to MIS critical issues at the collegiate level seems obvious. However, none of the major studies designed to determine the critical issues in the field of MIS have included teaching/research faculty as part of their sample of respondents.

Therefore, this study was designed to determine what, if any, differences exist between MIS managers and MIS faculty concerning their level of agreement on critical MIS issues. This study was also developed to discover what level of agreement exists between the two groups as to their perceptions of the level of importance of the critical MIS issues five years from now.

#### Need for the Study

The challenge of managing the information function in an ever changing, ever expanding, distributed processing, distributed user, distributed support staff world will continue to escalate in complexity (Rockart, Ball, and Bullen, 1982, p. 4). Given the ever changing nature of the area of MIS, the need to keep the key issues framework current is essential (Brancheau, 1987, p. 23). At the same time, however, it is equally essential to determine what

educators in this field believe to be the key issues and to determine if there exists a fundamental difference between what corporate leaders and the MIS faculty believe to be key issues. Tyler cites (1986) that while there is general agreement -- finally -- on the importance of including MIS in MBA education, business schools still differ widely on implementation issues. Roger Jenkins also reports that business executives and academics do not see eye-to-eye on what the graduate schools and their students need most (1984).

If an agreement, at least in part, is to exist between these two groups, comparative research into what these two groups believe to be the key issues is needed. University leaders must form a closer alliance with industry (Davis, 1986, p. 19). He also states that the greatest revolution in business is coming from the MIS department, not from accounting and sales. While corporate leaders are saying their company's future is leveraged to a successful information processing strategy, it is the MIS professionals who understand how that will be carried out and what is required on the part of tomorrow's business leaders. Therefore, if MIS educators and MIS professionals are to form this alliance, common ground on the critical issues of not only today, but of the future, must be determined.

## Statement of the Problem

The problem of this study was to determine the extent of the difference between what Management Information Systems (MIS) managers consider the level of importance of critical MIS issues and what Management Information Systems (MIS) faculty consider the level of importance of critical issues in MIS both today and five years from today.

## The Purpose of the Study

Knowledge of the most important issues in the MIS field will help focus research and educational efforts. The primary purpose of this study was to provide both the MIS business/industry managers and the MIS faculty of colleges and universities with a timely analysis of what was perceived to be the level of agreement between the groups on these critical issues in this field today and five years from today. In addition, this information may be used by business departments in colleges and universities as a means of enhancing curricular offerings in the area of MIS.

Through the collection of information about the perceived beliefs of what the level of importance of the selected MIS critical issues is today and will be in five years from these two groups, it was believed that each of the two groups could use this information to facilitate decision-making in their respective programs. Finally, by

providing a study of MIS management and MIS faculty of colleges and universities as to the perceived beliefs of the level of importance of critical MIS issues, the study could be used to enhance the field of research in this area and provide incentives for additional research or industry sponsored educational programs.

#### Delimitations of the Study

The researcher defined delimitations of the study include:

1. As organizations differ in both MIS need and scope, the study was not intended to result in specific MIS guidelines as to the key critical issues for every business/industry.
2. The study was not intended to result in specific curricular guidelines for the instruction of MIS managers. However, it should provide a basis for the possible areas of coverage to be included in a general curriculum for this program.

#### Limitations of the Study

The limitations for the study include the following:

1. The study was limited to two sample surveys. The first sample, MIS faculty, was limited to a random sample from the Directory of Management Information Systems Faculty in the United States and Canada (1988). The second sample, MIS managers, was limited to a random

sample from the Directory of Top Computer Executives, (1988). These faculty and managers may not be completely representative of all faculty and managers in the field of MIS because individuals not included in each of these two populations were excluded from the study.

2. The selected samples may not be representative of the populations.
3. The validity of the survey responses is dependent upon the interpretation and honesty on the part of the respondents.
4. Data collected may not encompass all of the critical MIS issues pertinent to MIS managers and MIS faculty.
5. As a result of the qualitative nature of the data collected, a certain amount of subjectivity in analyzing and making deductions is present. However, all efforts were made to report results with objectivity.

#### Assumptions

In regard to the study, the following assumptions were made:

1. It is assumed that the colleges and universities from which MIS faculty responded to the survey are representative of other MIS faculty not included in the study.



2. It is assumed that the organizations from which the MIS managers responded to the survey are representative of other MIS managers not included in the study.
3. It is assumed that the critical MIS issues presented in the study are representative of the critical MIS issues facing MIS managers and MIS faculty alike.
4. It is assumed that the survey instrument is both valid and reliable.

### Definitions

As many terms in the field of MIS have unique and varying uses, the following terms used in the study are defined.

Alignment in Organizations. The effectiveness with which IS can support the enterprise's information needs is dependent on its position within the enterprise.

Applications Portfolio. The planning and management of software applications.

Artificial Intelligence. A field of study that attempts to use computers for tasks traditionally considered to require some form of human intelligence (Wohl & Hunt, 1991, p. 523).

Competitive Advantage. Competitive advantage results from recognition of opportunities through creativity and innovation, followed by rapid and effective implementation

of information technologies to take advantage of these opportunities (Brancheau, 1987, p. 27).

Data as Corporate Resource. An organizational climate in which data are valued as a corporate asset.

Data and Document Storage. This includes main computer memory and secondary storage such as disk and tape.

Decision Support System. A "what-if" approach that uses an information system to assist management in formulating policies and projecting the probable consequence of decisions (Awad, 1988, p. 593).

End-user. Doing your own work on a computer rather than delegating it to support staff.

Executive Information Systems. Systems for creating and delivering critical financial, operational, and planning information to managers in formats tailored to their management style, information needs, organizational responsibilities, special interests and personalities; only contain information that is relevant to a specific manager (Wohl & Hunt, 1991, p. 530).

Expert Systems. Software programs that encode the relevant experience of a human expert and allow the system to act like that expert in analyzing and solving unstructured problems.

Human Resources. The available supply of professionally trained MIS people.

Information Architecture. A high-level map of the information requirements of an organization. It provides a guide for applications development and facilitates the integration and sharing of data among applications (Brancheau, 1987, p. 28).

Information System Funding. The ways and means an organization plans for and supplies monetary support to the MIS area.

Information Systems Role & Contribution. The recognition of the purpose and contributions made to an organization by the MIS area.

Management Information System (MIS). An integrated approach to the design and use of computer-based information systems that provides summary information and highlights exception conditions for corrective decision making; a federation of subsystems (Awad, 1988, p. 598).

MIS Faculty. Collegiate and university level professionals actively engaged in either teaching or research in the field of MIS.

MIS Managers. Management professionals who oversee the entire development of systems or applications to ensure that they meet the user's requirements. The goal is to get correct information to the authorized manager at the right time (Awad, 1988, p. 33).

Measuring Effectiveness. The measurement of performance, productivity, and effectiveness of the MIS area within an organization.

Multi-Vendor Integration. The ability to integrate and connect computer-based information systems in a multi-vendor environment.

Office Automation. The integration of computer and communication technology with human patterns of office work (Awad, 1988, p. 600).

Organizational Learning. The integration of appropriate new information systems technologies into the organizations operations through education and development.

Security & Control. The established organizational policies that pertain to the access to and use of the computer hardware, software, and data within an organization.

Strategic Planning. The alignment of the MIS long-range information system plan with the company's strategic business plan (Brancheau, 1987, p. 25).

Telecommunications. Telecommunications is "...the electronic process that permits the passing of information from one sender to one or more receivers with the output in a usable form (printed copy, fixed or moving pictures, optical signals). It includes all services, products, media and methodologies used to deliver information

electronically, from a simple telephone to sophisticated fiber-optic networks" (Charp & Hines, 1988, p. 94).

User Services Center. Facilities where technical analysts help functional employees use systems to solve problems.

### Hypotheses Tested

The following hypotheses were tested to determine significant differences:

- H<sub>1</sub>: MIS faculty and MIS managers do not differ in their perceived beliefs relative to the level of importance of selected critical issues in the field of MIS today.
- H<sub>2</sub>: MIS faculty and MIS managers do not differ in their perceived beliefs relative to the level of importance of selected critical issues in the field of MIS five years from today.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

This study was designed to determine the extent of the difference between what Management Information Systems (MIS) managers consider the level of importance of the selected critical MIS issues and what Management Information (MIS) faculty consider the level of importance of the selected critical MIS issues. In addition, the study sought to determine if these two groups differed in their perceived beliefs as to what the level of importance of these critical MIS issues would be five years from now. The purpose of the study was to provide a timely analysis of the current and future MIS critical issues, as perceived by the two groups. In doing so, this information could be used by business departments in colleges and universities as a means of enhancing curricular offerings in the area of MIS. Included in the review of literature are both theoretical research, indicating the present work completed on the topic of "critical/key issues" in MIS, and complementary research. Prior to a review of literature, the following searches were conducted to determine if similar studies had been done: The Educational Resources Information Center (ERIC)

documents and a review of dissertation abstracts. Finding no similar studies, the researcher also conducted searches of the business periodical index at the Oklahoma State University library and the East Central University library. In addition, the researcher was assisted by the East Central University librarian staff in conducting several on-line database searches in the fields of Management, MIS, MIS Curricula, and MIS Critical/Key Issues. While many of the sources were unavailable at either of these libraries, they were obtained through interlibrary loan services. The review of literature from various sources revealed the following information: (1) MIS critical issues as perceived by MIS Managers; (2) MIS critical issues as perceived by MIS Faculty; and (3) a perceived belief that business/industry and academia do not necessarily agree on what constitutes a sound MIS education, especially at the postgraduate level.

### MIS Managers Surveys

#### Critical Issues

The ever changing nature of MIS has resulted in a continuous need to evaluate and reevaluate the managerial issues within this field. The goal of MIS is to provide an environment for the support of various organizational and managerial decisions, (Awad, 1988, p. 13). To be able to do this, however, certain areas of activity should receive

constant and careful attention from management. Martin (1982) states these areas, labeled Critical Success Factors, should be continually measured. In order to identify these critical issues, a careful review of the literature revealed five surveys which specifically addressed the topic of MIS critical issues.

Martin (1982), Ball and Harris (1982), Dickson, Leitheiser, & Wetherbe (1984), Hartog and Herbert (1986), and Brancheau and Wetherbe (1987) have each examined what MIS managers perceive to be critical MIS issues. These critical issues, as defined by the results of the reviewed surveys, will be discussed below.

MIS Long Range/Strategic Planning & Integration. Long Range/Strategic Planning is used primarily by top management and their staff for long-term organizational planning - generally 1 to 5 years. It's purpose is to identify the long-range objectives of the organization and the policies that govern how to achieve them. That is, the ideas and consequent decisions of these managers focus upon what a company should be, how it should be run, and where the company is going (Thierauf, 1987; Awad, 1988; and Koorey and Medley, 1987). Each of the above mentioned MIS managers surveys found this to be a critical MIS issue.

Gauging and Measuring MIS Effectiveness. Measuring information systems effectiveness and productivity is



crucial for sound management of the MIS area. This function entails establishing costs and quantifying the value of information. This quantification of the value of information, however, is difficult to develop (Brancheau and Wetherbe, 1987). Even still, Brancheau and Wetherbe (1987), Ball and Harris (1982), Dickson (et al, 1984), and Hartog and Herbert (1986) each found this to be considered a critical MIS issue.

Telecommunications. Telecommunications means moving information by electrical transmission among multiple sites. Long-term telecommunication decisions need to be made despite continuing technological changes (Hartog and Herbert, 1986). Of the MIS managers responding to the five surveys, Ball and Harris (1982), Brancheau and Wetherbe (1987), Hartog and Herbert (1986), and Dickson, Leitheiser, & Wetherbe (1984) each found some aspect of telecommunications to be considered critical.

Developing Role of the Information Resource Manager.

The role of the information systems manager has evolved in 20 years from that of technician managing a relatively unimportant service function into that of a vice presidential-level whose department can substantially impact the entire organization. This role is now depicted as one of coordinator, motivator, and planner with a particular emphasis on strategic planning and the management of change

(Ives and Olson, 1981; and Rockart, Ball, and Bullen, 1982). Ball and Harris (1982) and Martin (1982) each specifically mention this critical issue in their surveys. While the remaining surveys do not include this issue specifically, they include this as a function of the MIS long-range/strategic planning and integration function (Brancheau and Wetherbe, 1987; Hartog and Herbert, 1986; and Dickson, et al, 1984).

Human Resource Development. Awad (1988) states that one of the most critical responsibilities of MIS managers consists of attracting, motivating, and retaining qualified personnel. For an organization to effectively achieve the long-range/strategic objectives established by top management, recruitment, retention, and development of the MIS human resource is essential. While this critical issue was not found to be one of the 'most' critical issues by each of the surveys, it was found to be a critical MIS issue by all of the surveys.

Education of non-MIS Management/Relationships with Management of Parent Organization/IS's Role and Contribution. This issue pertains to educating the senior corporate personnel as to the role of MIS and the contribution it can make to an enterprise (Hartog and Herbert, 1986). MIS organizations are often viewed as an overhead expense, with little appreciation of their

contribution to the business (Brancheau and Wetherbe, 1987). All of the surveys indicated it was critical to educate the general corporate management as to the role and contribution that MIS makes to the organization in achieving their long-range goals.

Integration of Office Automation, Factory Automation, Data Processing, Telecommunication/Centralization vs. Decentralization. Hartog and Herbert (1986) state that MIS must integrate data processing, telecommunications, and automated office technologies. Brancheau and Wetherbe (1987) and Dickson, Leitheiser, & Wetherbe (1984) also found this issue to be critical to MIS. While Martin (1982) and Ball and Harris (1982) do not refer to this issue directly, they each conclude that MIS should pay close attention to the issue of centralization vs. decentralization of MIS functions. The issue of centralization vs. decentralization was the first step necessary to full scale integration of computerized activities. Therefore, while these two surveys do not directly address the issue of integration, they do suggest that it's forerunner, decentralization of MIS functions, was a critical issue for MIS managers.

End-User Computing. Rockart and Flannery (1983) classified end-users into six types. These types are: nonprogramming end users; command level end users; end user programmers; functional support personnel; end user

computing support personnel; and DP programmers. Awad (1988) defines an end-user as anyone authorized to enter, access, or retrieve data from a computer facility. This variance in end users' levels of expertise necessitates a need for better MIS policy guidelines and support for end-user computing while still maintaining the integrity of the MIS operation. With the exception of Martin (1982), all of the surveys indicate this issue to be critical to MIS managers.

Data Security, Control, Quality, and Privacy. The need to balance data security and data availability is a constant concern for the MIS manager. According to Koory and Medley (1987), an ever-present need in the computing area is security for both data and facilities. Planning is needed to support the development of methods to control access to data. All of the surveys except Martin (1982) found this to be an issue to which MIS managers should pay close attention.

Decision Support Systems/Artificial Intelligence and Expert Systems/Fourth Generation Languages. Decision support systems (DSS) are "what-if" approaches that use an information system to assist management in formulating policies and projecting the probable consequence of decisions (Awad, 1988). Artificial Intelligence (of which expert systems are a subset) involves machines that

communicate in simple English, reason solutions to problems, and explain how they arrive at conclusions (Thierauf, 1987). Fourth generation languages are user-oriented, easy-to-learn, nonprocedural programming languages (Awad, 1988). Each of these computing developments offer the MIS manager new tools for which to enhance the overall productivity of the MIS area, including end-user computing. However, as suggested by Hartog and Herbert (1986), MIS must study and develop a strategy for these new tools now in order to plan for their implementation. In addition to Hartog and Herbert (1986), Brancheau and Wetherbe (1987) and Dickson, Leitheiser, & Wetherbe (1984) found these new computing tools to be critical issues for the MIS manager.

Competitive Advantage. Competitive advantage results from recognition of opportunities through creativity and innovation, followed by rapid and effective implementation of information technologies to take advantage of these opportunities (Brancheau and Wetherbe, 1987). This issue was only directly addressed by the Brancheau and Wetherbe (1987) survey. However, the managers surveyed indicated this issue to be second only to long-range/strategic planning.

Organizational Learning. Brancheau and Wetherbe (1987) state that organizations that prosper in the future will be those that integrate appropriate new information system

technologies into their entire operation. Therefore, business structures and organizational structures will need to be modified in many cases. This will result in a continual education and development of the organization to these information system technologies. In addition to Brancheau and Wetherbe (1987), Hartog and Herbert (1986) and Dickson (et al, 1984) each indicate this to be another critical area for the MIS manager to address.

Aligning the MIS Organization with That of the Enterprise/Support of the Objectives and Priorities of the Parent Organization. The effectiveness with which MIS can support the enterprise's information needs may be dependent on its position within the enterprise (Brancheau and Wetherbe, 1987). As organizations become more decentralized reporting relationships become more difficult for subordinates and managers alike. Therefore, Martin (1982), Brancheau and Wetherbe (1987), Hartog and Herbert (1986), and Dickson (et al, 1984) report this issue to be critical to the MIS manager.

Data as Corporate Resource/Effective Use of the Organization's Data Resources. Thierauf (1987) suggests that information (analyzed data) is a sixth major corporate resource. Since the management information system can assist managers at all levels in performing their managerial functions of planning, organizing, directing, and

controlling available corporate resources, then the effective use of this corporate resource is critical. All of the surveys except that of Ball and Harris (1982) indicated this to be a critical issue for the MIS manager.

Information Architecture. An information architecture provides a guide for applications development and facilitates the integration and sharing of data among applications. In essence, it is a high-level map of the information requirements of an organization (Brancheau and Wetherbe, 1987). Only the most recent survey (Brancheau and Wetherbe, 1987) addressed this critical issue but found it to be ranked eight in importance by the MIS managers surveyed.

Software Development. Hartog and Herbert (1986) state that software development, specifically applications software, needs to be developed more quickly and with consistently high quality. Dickson, Leitheiser, & Wetherbe (1984) reported this issue to be ranked fourth by the MIS managers surveyed, but the same issue dropped from fourth to thirteenth in importance in the Brancheau and Wetherbe (1987) survey. They concluded this drop in importance may be due to the increasing use of packaged applications software in lieu of in-house development. Nevertheless, this issue is still consistently considered important to the

MIS Managers surveyed in these three studies to be considered critical.

Managing and Planning the Applications Portfolio.

Dickson, Leitheiser, & Wetherbe (1984) state the difficulty in trading off the maintenance costs of old application systems with the development expenses of new ones makes this an important issue. Brancheau and Wetherbe (1987) and Dickson (et al, 1984) each found this issue to be critical to the MIS manager.

Other Issues. The following MIS critical issues were found to be important to MIS managers by only one of the surveys. Brancheau and Wetherbe (1987) report that multi-vender integration, MIS's funding level and packaged software consideration was critical. Hartog and Herbert (1986) report that information center management and implementation was also critical to the MIS manager.

Martin (1982) reports the following broad categories were issues that MIS management should address: system development, data processing operations, and management control of the MIS/DP organization.



## MIS Faculty

### Critical Issues

The review of related literature pertaining to MIS critical issues by MIS faculty primarily centered around the subject of curriculum development in the field of DP/MIS. Therefore, this section will provide a review of what has occurred in MIS curriculum development as well as a summary of major topics included in leading MIS textbooks. The assumption was that the curriculum requirements and major topics of inclusion in the MIS textual information include those issues the MIS Faculty consider critical.

Curricula Requirements for MIS Education. The variety of computing solutions that are possible within the DP/MIS environment have increased tremendously during the last ten years (Armstrong, 1985). In an effort to provide students with the necessary skills and knowledge to meet this ever expanding technical area, the Data Processing Management Association (DPMA) Education Association began developing a model Information Systems curriculum in 1979 (Aulgur, 1982). This curriculum, as reported by Aulgur, was designed for four-year undergraduate programs commonly offered through schools of business that require a concentration of business courses in support of the computer-oriented courses of study.

This original DPMA/CIS curriculum focused on the following areas of concentration:

A: Computer Related Instruction: application programming, systems analysis and design, software and hardware concepts, office automation, data base program development, distributed data processing, EDP auditing and controls, information resource planning, and information resource management.

B: Business Related Instruction: principles of management, principles of marketing, principles of finance, quantitative methods, managerial accounting, financial accounting, organizational behavior, and production and operations management (Bettinger and Simpson, 1983).

Based on this curriculum offering, the key areas of coverage by the colleges and universities adopting the DPMA curriculum address basic computer technical skills and basic business skills, as perceived by academicians.

Alternative curriculums to the DPMA, such as the Computer Information Systems (CIS) curriculum discussed by Richards and Zant (1985), the ACM curriculum discussed by Rockart (1979), and the DeVry curriculum discussed by Dean (1984) may differ slightly in course content. However, these curricula still center course offerings around basic computer technical skills and basic business skills.

MIS Textual Topics. In order to discover what topics/issues were included in specific collegiate MIS courses, three recent MIS textbooks were evaluated by the researcher. These MIS texts were: (1) Thierauf, Robert J., Effective Management Information Systems, Merrill Publishing Co., 1987; (2) Awad, Elias M., Management Information Systems: Concepts, Structure, and Applications, Benjamin/Cummings Publishing, 1988; (3) Koory and Medley, Management Information Systems, South-Western Publishing, 1987; and, Wohl and Hunt, Managing Integrated Business Systems: A Case Approach, South-Western Publishing, 1991.

Based on the analysis of these texts, the following topics were included and may be considered to be critical issues to MIS education as perceived by the authors.

1. Information as a corporate resource
2. Decision support systems/artificial intelligence: expert systems/office automation/fourth generation languages
3. End-user computing
4. Information management
5. Computer hardware and software for effective MIS
6. File organization and data retrieval
7. Database management
8. Telecommunications
9. Application planning and system development
10. MIS managerial considerations, including human resource development and planning

11. Systems analysis and design
12. Equipment selection and implementation of MIS
13. Effective control of MIS, including data security, privacy, and integrity
14. MIS ethics

While the issues were neither organized nor presented in the same manner by the different authors, each of these texts provided coverage of all of the above issues. When this is compared with the list of critical issues from the previous section (MIS managers: Critical Issues), many of the critical issues are the same. Couple this with the curricula design from the DPMA and related curricula's discussed above, it appears that a match exists between what MIS managers perceived to be critical issues and what academia perceived to also be critical for their graduates to know. Nevertheless, as will be presented in the following section, individuals in industry may disagree as to the degree of adequacy of the MIS graduates to effectively manage in the MIS area upon graduation.

#### MIS Education: Business/Industry vs. Academia

Business and industry have long looked to academia from which to recruit the major portion of their management personnel. And yet, based on recent literature, their satisfaction with the preparation of trained graduates in

the field of MIS, especially at the MBA level, may be in question. The literature reviewed in this section was felt to be important to help provide justification for the need for the study.

Michael Tyler (1986) states that management information systems have long been overlooked by the nation's top business schools, despite their growing importance in corporate operations. Curt Hartog (1985) cited a major gap between collegiate computer science/MIS departments and business data processing departments exists. Furthermore, neither the business schools nor the computer science schools have an understanding about what's happening in business, let alone teaching it (Martin, 1985).

While MIS is increasingly being integrated into both undergraduate and postgraduate business education, the scope, purpose, and level of training, when viewed against the backdrop of the real business world of tomorrow, is a long way from being satisfactory (Davis, 1986). The prevailing philosophy today is that university leaders must form a closer alliance with industry in all functional areas of business, including MIS. With this alliance, a closer match between what is needed by business/industry and what is taught at colleges and universities will occur. But, this industry-academic interaction must increase in a way that is not tied to immediate needs of industry, but rather to the long range needs (Hartog, 1985).

In a study conducted by Ives and Olson (1981), it was found that today's information systems manager is clearly more of a manager in the classical sense than a technician, needing interpersonal skills and the ability to motivate and guide subordinates. The role of this MIS manager being to provide needed information in a form and format best suited to the user, and to accomplish this within the specifics of legal requirements and corporate goals (Ebner, 1986).

Presently, however, one major complaint about current computer science graduates is their general lack of business knowledge (Ebner, 1986). And yet, those business graduates with a background in MIS are not as strongly founded in the technical computing knowledge. The conclusion is that business/industry wants both.

Academia is not unaware of this growing concern with the gap between business/industry and collegiate MIS curriculum. Michael Porter, a Harvard MIS professor, states "information technology is now affecting all aspects of a company and how it competes in an industry (Tyler, 1986). Other leading MIS faculty were also interviewed by Michael Tyler (1986). Although their approaches to how this was to be done differed, there was general agreement on one basic issue: the inclusion of MIS in MBA education. If academia is to produce graduates who possess those qualities of general manager and technical MIS specialist, each facet must be included in the curriculum. According to William R.

King, University of Pittsburgh professor, the general philosophy of this institution is that every manager needs to be a manager of information (Tyler, 1986).

Business, in response to the MIS deficiencies the present managers now have, has sought alternative educational programs in addition to MBA programs. As a result of this, several specialized programs are being offered by leading business schools. For example, Wharton, Stanford, MIT, Harvard, and many others offer specialized programs in such areas as Management Information Systems for Strategic Advantage, Telecommunications Technology, MIS Employee Management, and Information as a Competitive Weapon (Tyler, 1986). These programs are designed to provide intensive short-courses to middle- or top-level managers for the purpose of providing those individuals who already possess management skills with the needed technical skills. These courses are offered as an attempt to close the gap between business and academia in the field of MIS. At the same time, it offers the MIS academic an opportunity to build contacts within the business community to aid in the formation of a closer alliance with industry, as stressed by both Davis (1986), Hartog (1985), and Tyler (1986).

#### Summary

The review of literature covered the topics of MIS critical issues as perceived by MIS managers, MIS critical

issues as perceived by MIS faculty, and a perceived belief that business/industry and academia do not necessarily agree on what constitutes a sound MIS education as preparation for careers in the field of MIS.



## CHAPTER III

### RESEARCH DESIGN AND PROCEDURES

This study was designed to obtain data from selected MIS managers and collegiate MIS faculty in order to determine what they perceived to be the level of importance of selected critical issues in Management Information Systems both today and five years from today. Data were obtained from respondents regarding those MIS issues that were considered key/critical as indicated in scholarly research in the field of MIS, curricula requirements for MIS graduates, and textual content in leading MIS texts currently in use by colleges and universities.

The following procedural steps were used in researching the problem, planning the study, conducting the survey of each group of respondents, and presenting findings, conclusions, and recommendations.

1. Sample Selection
2. Development of the survey instruments
3. Preparation of cover letters
4. Collection of data
5. Presentation of findings, conclusions, and recommendations

## Sample Selection

The sample of collegiate MIS faculty was taken from the population of the Directory of Management Information Systems Faculty in the United States and Canada (1989). The sample of MIS managers was taken from the population of the Directory of Top Computer Executives, (1988). These sample were randomly selected using a table of random numbers. The size of the samples were determined based on a table for selecting sample size (Wunsch, 1986). As suggested by Wunsch, a sample size of 340 with a response rate of approximately 30% was required for the MIS faculty in order to confidently reflect the population, with a confidence level of .05, and a sample size of 380 with a response rate of approximately 30% was required for the MIS managers to obtain the same confidence level.

The sample for each group was selected using a random sampling procedure to identify the individuals. Because the table of random numbers randomizes with replacement, three lists were necessary to reveal the different numbers. In order to compare the number lists with the two directories, the researcher performed this function manually. All three lists were required to complete the sample selection process.

## Development of the Survey

### Survey

The study instrument for each group was designed by December, 1989, to gather data through a mail questionnaire. In order to develop the questionnaires, the following steps were completed. The researcher reviewed literature related to questionnaire design, literature related to critical issues in MIS as perceived by MIS managers, and literature related to critical issues in MIS as perceived by collegiate MIS faculty, and research questionnaires developed by others in respect to MIS critical issues, and the pilot study. The questionnaires were also distributed to dissertation committee members in order to further develop and refine the survey instrument.

#### Input from Pilot Study

According to Isaac and Michael (1987, p. 34), "pilot studies make it possible to get feedback from research subjects and other persons involved that lead to important improvement in the main study (p. 35). In addition, they state "it can provide the research worker with ideas, approaches, and clues not foreseen prior to the pilot study" (p. 34). In order to improve the face validity, clarity, and appropriateness of possible responses, a pilot study was conducted. Ten subjects were randomly selected from each of

the two populations. The pilot study questionnaires were mailed on November 29, 1989, with a return response request of December 15, 1989. There were eight returns from the MIS Faculty (80 %) and four returns from the MIS Managers (40 %): Those individuals included in the pilot study, selected randomly before the remaining sample was selected from the population sample, were not included in the random selection for the final sample lists.

The participants in the pilot study evaluated the study instrument for face validity, clarity, and appropriateness of possible responses. Appendix F contains examples of the cover letters and survey instruments used in the pilot study. The pilot study cover letter differs from the final instrument cover letter because the pilot study participants were informed that they were participating in a pilot study. Based on their input and suggestions, plus the suggestions from the dissertation committee, the original questionnaire was revised.

#### Contents of the Survey Instruments

Due to the differences in career and organizational objectives, the first section of the survey instruments varied for the two sample groups. This section was related to demographic data and personal data. Each of these two sections will be discussed separately. The second section was related to the perceived beliefs of the MIS managers and

MIS faculty as to the current level of importance of 31 MIS critical issues and the perceived beliefs of the MIS managers and MIS faculty as to the perceived beliefs as to the level of importance of these same issues five years from today.

The first main section of the survey instrument sent to MIS managers contained the following subsets:

1. Identification code--to enable the sending of a follow-up mailing
2. Instructions for completing the questionnaire and purpose of demographic data
3. Company information--primary business purpose; geographic region in which the respondent currently works (State codes were obtained from the 1983 Rand-McNally Yellow Guide.); annual MIS/DP budget (including telecommunications; number of employees in MIS/DP department
4. Personal Information--highest level of education achieved; college major of highest earned degree; range of annual salary
5. Request for survey results

The first main section of the survey instrument sent to MIS faculty contained the following subsets:

1. Identification code--to enable the sending of a follow-up mailing

2. Instructions for completing the questionnaire and purpose of demographic data
3. Personal Demographic information--current faculty position; highest level of college/university degree completed; membership in which academic department; previous or current MIS private sector experience; courses currently taught
4. Institutional Demographic information--college/university undergraduate enrollment; undergraduate major offered in MIS/CIS/IS; Masters degree offered in MIS/CIS/IS; Doctoral degree offered in MIS/CIS/IS; whether doctoral degree is a Ph.D, D.B.A., or Ed.D
5. Request for survey results

The second section of the survey instrument was the same for both groups with the exception of the color of paper used. Again, the color of paper used for MIS managers was blue, and the color of paper used for MIS faculty was yellow. Each of the complete questionnaires was four pages in length, front and back. This section consisted of the following subsets:

1. Title--Management Information Issues
2. Instructions for completing the questionnaire
3. Thirty-two MIS issues (See Appendix A)

### Preparation of Cover Letters

Dillman (1978) also recommended that cover letters used for first and subsequent mailings be similar but not identical. Therefore, the first cover letter, using a blocked, business letter style and reproduced on Department of Business Education and Office Administration stationery from East Central University, Ada, OK, was designed to encourage participation in the survey. It contained the exact date of mailing; a list of benefits to the group with whom the recipient of the letter was identified; a brief explanation of the study; and confidentiality assurance. The letter was signed by the researcher and included her academic title (See Appendix C).

The cover letter for the second mailing was an exact copy of the original letter. However, using desktop publishing software, an additional boxed section was overlaid into the bottom right corner of the letter. The information contained in this boxed overlay indicated the researcher had not received the completed questionnaire, and a stronger appeal was made to encourage participation and emphasize the importance of responding (See Appendix C).

## Collection of Data

### Mailing Procedures

After analyzing the suggestions offered by the participants of the pilot study on the original version, the cover letters and questionnaires were typed, using desktop publishing software; prepared for mailing; and mailed to the sample subjects. Names and addresses of the sample participants were found from two sources. The MIS faculty sample list was obtained from the 1989 Directory of Management Information Systems Faculty in the United States and Canada, and the names and addresses for the MIS managers sample list was obtained from the Directory of Top Computer Executives (1988).

The previously discussed cover letters were enclosed to explain the study's purpose and to encourage a favorable response. Identification numbers were included on each questionnaire. The researcher numbered the sample participant's mailing lists from "1" to "n" for each list. These corresponding identification codes were then transferred to each questionnaire. These codes were hand written on each mailed questionnaire in order to identify respondents for purposes of the second mailing. The researcher maintained a log of respondents in order to differentiate between first and second mailings. Dillman (1978) suggests that a mail survey response "relies heavily



on personalization throughout the implementation process", the actual magnitude of each sample size precipitated the use of mailing labels for the first mailing. Address labels were not used for the second mailing and these addresses were hand typed. The researcher used the East Central University bulk-mail facility. Although this did not avoid the appearance of a mass-mailing, East Central University letterhead envelopes were used, offering the necessary and appropriate appearance of educational institution affiliation.

The institution return address was part of the envelope return address and ensured that unreachables would be returned to the sender. An East Central University postage-paid return envelope was included to encourage and facilitate the return of the questionnaires. To make the routing of the returned questionnaires easier for East Central University's central mailing system, the return envelopes contained the researcher's name (Appendix B).

### Mailing Schedule

Dillman (1978) recommends mailing surveys on Tuesdays. This allows convenient mail handling of weekend mail before the surveys are received by an organization and allows time for a researcher to receive feedback on unreachables within the week. Since the researcher used bulk-mail, this premise may not be as effective.

The first mailing was sent on Tuesday, March 6, 1990. The deadline date which the researcher specified for return was March 20, 1990. The second mailing, approximately one month after the first mailing of the survey instrument, was Tuesday, April 10, 1990. This was sent to the members of the two sample groups for which there had been no response. The researcher did not include a response deadline in the second cover letter.

### Responses

The rate of response for the mail surveys for the two groups was calculated as follows. This method was recommended by Dillman (1978):

$$\text{Response Rate} = \frac{\text{Number Returned}}{\text{Number in Sample} - (\text{noneligible and nonreachable})} \times 100$$

The response rate for the MIS Faculty group was:

$$\text{Response Rate} = \frac{167 \text{ Returned}}{347 - 3 \text{ nonreachables}} \times 100 = 48.55\%$$

The response rate for the MIS Managers group was:

$$\text{Response} = \frac{102 \text{ Returned}}{389 - 6 \text{ nonreachables}} \times 100 = 26.64\%$$

Three questionnaires were returned from the MIS faculty group without a forwarding address and were classified as nonreachable. There were 6 questionnaires returned from the MIS managers group without a forwarding address and were also classified as nonreachable. Table I on the next page reports the return and non-return percentages, based upon the correct sample size.

TABLE I  
QUESTIONNAIRE DISTRIBUTION  
RETURNS AND NON-RETURNS

Category	Number	Percent
<b>MIS Faculty:</b>		
Total Number in Sample (First Mailing)	347	100.00
Total Corrected Number (Corrected for Unreachables)	344	100.0
Total Returns from First Mailing	99	28.8
Total Returns from Second Mailing	68	19.8
Total Responses	167	48.6
Total Non>Returns	177	51.4
Unusable Responses	9	2.7
Total Usable Responses	155	45.1
<b>MIS Managers:</b>		
Total Number in Sample (First Mailing)	389	100.0
Total Corrected Number (Corrected for Unreachables)	383	100.0
Total Returns from First Mailing	71	18.5
Total Returns from Second Mailing	31	8.1
Total Responses	102	26.6
Total Non>Returns	281	73.4
Unusable Responses	2	.6
Total Usable Responses	94	25.0

## Data Analysis

Upon receipt of the returned questionnaires, the responses were coded and entered into micro-computer application software data files, using SYSTAT. These data files were then manipulated with the statistics procedural modules of this same software application program. The responses were tabulated from each questionnaire to reveal the frequencies from the first section of the questionnaire and to determine strength of association scores between the groups for the second section of the questionnaire. After conducting these statistical tests, data were analyzed by the researcher in two groups (as defined by the study instrument). These groups were: (1) data revealing sample description of the group demographics, and (2) data pertinent to the main study questions.

### Sample Description Data

According to Hillstead (1972), the responses from a sample that are not relevant to main study questions should be placed in the procedures chapter. Those survey items in the first section of each surveyed group fall into this category. For the MIS managers this includes: primary business purpose, geographic region in which respondent currently works, annual MIS/DP budget (including telecommunications), number of employees in MIS/DP

departments, respondents highest level of education, respondents college major for highest level of education, and range of annual salary. Appendix D contains tables revealing these sample descriptions.

The MIS faculty included: current faculty position, highest level of college/university degree completed, academic department membership, previous or current MIS private sector experience, and courses currently taught by the respondent. Appendix D contains tables revealing these sample descriptions.

### MIS Managers Questionnaire

#### Demographic Responses

Primary Business Purpose. Table IX reveals the frequency of responses based on categories of finance, government, service, manufacturing, and other. There were two categories which received not only the greatest number of frequencies but also had equivalent frequency responses (p. 126). These were manufacturing and other, which had frequencies of 27 (28.7 percent of all responses). The next highest category was service, with a frequency of 19 (20.2 percent of all responses). The last two categories, finance and government had frequencies of 13 and 8, respectively. These two categories represent 13.8 percent of all responses for finance and 8.5 percent of all responses for government. Table X (p. 126) depicts the primary business purposes the

respondents indicated as "other". Those primary business purposes noted as "other" by the respondents which had a frequency greater than one include: mining, petroleum, public utility, retail sales, and, transportation.

Geographic Region. The geographic regions in which the respondents were currently working, as contained in the Company Information Section of the MIS managers questionnaire, included: Eastern, Southern, North Central, Mountain Plains, Western, and other. Of the 94 usable responses, the greatest number of responses came from the North Central region, with a frequency of 31 (33 percent). The second greatest frequency of responses was from the Eastern region, with a frequency of 25 (26.6 percent). This region was followed by the Southern region (frequency of 14; 14.9 percent) and the Western region (frequency of 11; 11.7 percent). Mountain Plains had the fewest responses with the exception of the "other" category. The frequency was six (6.4 percent) for the Mountain Plains region. "Other" had a combined frequency of six and a 6.4 percentage. Those respondents who indicated "other" said that they worked either all over the country or internationally. Table XI reveals the frequencies of responses according to category (p. 127).

Annual MIS/DP Budget (including Telecommunications).

Respondents were asked to indicate their company's

approximate annual MIS/DP budget including telecommunications. This included: under \$100,000; \$100,001-\$250,000; \$250,001-\$500,000; \$500,001-\$1,000,000; \$1,000,001-\$5,000,000; and greater than \$5,000,000. The data analysis revealed the fifth category (\$1,000,001-\$5,000,000) to have the greatest number of respondents, with a frequency of 37 (39.36 percent). The sixth category (greater than \$5,000,000) had a frequency of 25 (26.6 percent). Categories three and four had frequencies of 13 and 11, respectively, with percentages of 13.83 and 11.70. The categories with the fewest responses were the first two. Category one (under \$100,000) had a frequency of only one (1.06 percent), and category two had a frequency of seven (7.45 percent). Table XII illustrates the frequency responses by category (p. 128).

#### Number of Employees in the MIS/DP Department.

Respondents were asked to select the number of employees working in the MIS/DP departments. Table XIII depicts the category breakdown of the 94 usable responses (p. 139). Category two (11-50 employees) had the highest response, with a frequency of 35 (37.23 percent). The second highest response was category one (1-10 employees), with a frequency of 23 (24.47 percent). Categories three (51-100 employees) and four (101-500 employees) had the third and fourth highest number of responses, with frequencies of 19 (20.21



percent) and 14 (14.89 percent), respectively. Those categories with the fewest responses were five and six. Category five (501-1,000 employees) had a frequency of 2 (2.13 percent), and category six (over 1,000 employees) had a frequency of only one (1.06 percent).

In order to further develop a rudimentary profile of the MIS managers respondents, the researcher also included three questions in the survey instrument. These were:

1. . What is the highest level of education that you have achieved?
2. What description best illustrates the major of the highest college degree you have completed?
3. Which category best describes your annual salary

After data analysis, the following findings were indicated for each question.

Highest Level of Education Achieved. This question contained the following categories: Completed Doctoral Degree, Completed Masters Degree, Completed 4-year College, Completed High School, and "other". Within the constraints of these categories, 42 respondents (44.7 percent) indicated their highest level of education to be the 4-year college category. The second highest response was completion of a Masters degree, with a frequency of 29 (30.9 percent). The categories indicating completion of only high school or a doctoral program had respective frequencies of eight (8.4

percent) and two (2.1 percent). The final category, "other", had a frequency of 13 (13.9 percent). Those respondents who indicated "other" as the appropriate category stated that they had received a two-year technical certificate. Table XIV illustrates a complete frequency breakdown (p. 130).

Major of Highest Earned College Degree. Respondents were asked to indicate the description which best illustrated the major of the highest college degree they completed. Table XV, page 131, indicates the findings. Of the respondents, 40 indicated their major had been business/accounting (42.6 percent); 23 indicated "other" (24.5 percent); 12 indicated Computer Science as their major (12.8 percent); seven indicated Liberal Arts (7.4 percent); and Education and Engineering each had frequencies of three (3.2 percent). Of the respondents, only six indicated their major to have been MIS (6.4 percent).

Annual Salary. Respondents were asked to indicate within their current salary an approximate range. The ranges included were: \$10,000 or less; \$10,000-\$29,999; \$30,000-\$39,999; \$40,000-\$49,999; \$50,000-\$59,999; \$60,000-\$69,999; \$70,000-\$79,999; \$80,000-\$89,999; and over \$90,000. Of the 94 responses that were usable, 20.65 percent reported an annual salary of \$50,000-\$59,999; 19.56 percent reported an annual salary over \$90,000; 14.13 percent reported an

annual salary of \$40,000-\$49,999; 14.13 percent reported an annual salary of \$80,000-\$89,999; and 9.78 percent reported an annual salary of \$70,000-\$79,999. There were no responses to the first two categories; indicating that all respondents had an annual salary of \$30,000 or greater (See Table XVI, p. 132).

### MIS Faculty Questionnaire Demographics Response

Current Faculty Position. In order to determine the current faculty position of the respondents, they were asked to indicate whether they were a professor, an associate professor, an assistant professor, an instructor, or other. Of the 155 usable responses, 33.5 percent indicated they were professors, 31.6 percent indicated they were associate professors, and 30.3 percent indicated they were assistant professors. Only 2.6 percent of the respondents from this group indicated they were at the instructor level and 1.3 percent indicated "other." Those respondents who indicated "other" stated that they were currently assigned to research positions. (See Table XVII. p. 133)

Highest Level of College/University degree completed. The frequency of respondents who indicated they had completed a doctoral degree was 135, which is 87.1 percent. Those respondents who had completed a master's degree as their highest level had a frequency of 19 (12.3 percent).

Only one respondent indicated a bachelor's degree as the highest level and this was 0.6 percent of the 155 total respondents. Table XVIII indicates the frequency breakdown for this category (p. 134).

Academic Department. Respondents were asked which academic department best described the one for which they were a current member based on the specific categories. The MIS department was most often selected with a frequency of 85 (54.8 percent). The second highest category of respondents was "other" and had a frequency of 29 (18.7%). Tables XIX and XX illustrate the distribution and examples of this category (p. 135).

Previous MIS or MIS Related Private Sector Experience. This question first asked the respondents to indicate whether they currently or had previously held a MIS or MIS related position in the private sector. Of the 155 usable responses, the frequency of responses answering yes was 102 (65.8 percent). Those respondents who answered yes were next asked to indicate (check) their primary responsibilities in the private sector. As they were asked to check all relevant categories, the percentages were greater than 100 percent. Table XXII (p. 136) depicts the available categories and the percentage of respondents for each category. There were 268 categories selected by the 102

respondents, which indicated they now held or had previously held private sector experience. Of these categories, the most often cited category from the "yes" respondents was systems development, with a 64.7 percent response rate. The second highest category was consulting (54.9 percent response rate). Education and training had a percentage response rate of 34.3; general MIS management had a percent response rate of 27.5; data base management had a percent response rate of 22.5; and MIS planning had a 20.6 percent response rate.

The remaining categories, with the exception of "other", had percentage response rates of 12.7 percent for information resource management; 6.9 percent for telecommunications; and 2.9 percent for accounting. "Other" had a combined percentage of 15.7. Those responses which explicitly indicated their definition as "other" are recorded in Table XXII (p. 136).

Courses Currently Teaching. Respondents were asked to identify courses they were currently teaching. Since the respondents were asked to check each relevant category, the cumulative percentage total for this question was greater than 100 percent. The respondents checked a total of 322 categories with an average frequency of checked categories of 2.08. The respondents indicated that specific courses in MIS had the highest frequency (frequency = 78; 24.22

percent). The next highest category indicated by the respondents was "other," with a frequency of 67 and a percent of 20.81. Systems analysis and design was indicated 33.54 percent of the time by the respondents; microcomputer applications were indicated by the respondents 30.32 percent of the time; programming was indicated 18.06 percent of the time; telecommunications was selected 7.74 percent of the time; and EDP auditing was selected only 2.58 percent of the time by the MIS faculty respondents. Table XXIII (p. 137) illustrates the courses specifically indicated as "other." However, those courses identified by "other" which had a frequency of greater than one were: accounting information systems; artificial intelligence; doctorate seminar in IS/MIS; decision support systems/expert systems; information resource management; and production operations management.

Undergraduate Enrollment. Respondents were asked to check the category which illustrated the approximate undergraduate enrollment of the college or university with which they were currently affiliated. Of the 155 usable responses, 102 selected the "greater than 6,000" category (66.45 percent). The third enrollment category, 2,000-3,999, had a frequency of 22 (14.19 percent), and category four, 4,000-5,999, had a frequency of 18 (11.62 percent). The first two categories had relatively small frequencies of four and eight (See Table XXIV, p. 138).

In order to determine if colleges and universities were incorporating the field of MIS as an independent curriculum and at what level, the respondents were asked to indicate if the colleges and universities with which they were affiliated offered degrees in MIS. The researcher identified the degree titles as MIS/CIS/IS, as these were the most frequently cited major titles in the literature reviewed. The frequency results for this section of the survey instrument are presented below.

Undergraduate, Masters, and Doctoral Degrees Offered.

Based on the frequency of responses from the 155 usable survey instruments, 82.58 percent of the respondents indicated their institutions offered undergraduate majors in MIS/CIS/IS (frequency = 128). Approximately 43 percent of the respondents identified that their institutions offered masters degrees in MIS/CIS/IS, and 29 percent of these institutions offer a doctoral degree in MIS/CIS/IS (See Table XXVI, p. 139). Those respondents indicating doctoral degrees were asked to identify if the degrees were classified as Ph.D., D.B.A., or Ed.D. Of the 45 respondents who indicated their institutions did offer a doctoral program in MIS/CIS/IS, 39 identified their program as Ph.D degrees (86.67 percent); 4 identified their programs as D.B.A. degrees (8.89 percent), and 2 identified their programs as Ed.D. (4.44 percent). Table XXVI (p. 149)

illustrates the frequency breakdown responses for the above respondents on the discussed items.

#### Data Pertinent to the Main Study Questions

To show the relationship between how MIS faculty respondents and MIS manager respondents viewed the level of importance of the critical MIS issues, the Pearson's Chi-square test of association statistical test was performed on issues 1 through 31. Issue number 32 was not included because it was an "other" category, and was included to elicit respondent's opinions on any issue not included in the survey instrument. Table XXVIII lists issues reported by the respondents in this "other" category along with the frequency of responses (p. 140).

The Pearson Chi-square test was selected as being appropriate for testing the significance of differences between two independent groups (Siegle, 1956). This was determined by several factors: number and levels of independent variable(s); research design; number and levels of dependent variable(s); and between-subjects design (Linton and Gallo, 1975). Based on these criteria, the following conclusions were drawn:

1. The dependent variable was ranked using Likert-type scale from one to five: (1) Not Important; (2) Of Little Importance; (3) Somewhat Important; (4) Important; and (5) Very Important



2. The research design was between subjects
3. One independent variable was tested with two levels: (1) MIS faculty, and (2) MIS managers

The tabulation and interpretation of data pertinent to the main study questions are reported in Chapter IV.

### Cramer's Statistic

According to Linton and Gallo (1975), "a statistically significant result for tests designed to indicate relationship between variables tells us only that at a specified probability level, the relationship exists to some extent in the population from which the subjects have been randomly drawn" (p. 329). It does not, however, tell you how strong the relationship is. Therefore, for those selected critical MIS issues found to have a statistically significant Pearson's Chi-square value, the Cramer's V statistic is reported.

### Presentation of Findings, Conclusions and Recommendations

The results of Pearson's chi-square statistic for relationship and the Cramer's V statistic for strength of relationship tests which are pertinent to the main study questions are reported in Chapter IV. Based on the findings reported in Chapter IV, conclusions, and recommendations are presented in Chapter V.

## CHAPTER IV

### ANALYSIS AND INTERPRETATION OF THE DATA

Data were gathered from 94 randomly selected MIS managers and 155 randomly selected MIS Faculty. The populations from which these samples were drawn were listed in the Directory of Management Information Systems Faculty in the United States and Canada (1989) and the Directory of Top Computer Executives (1988). The study's primary focus was to determine the relationship of agreement between these two groups on the level of importance of selected MIS critical issues both at the time of the study and five years from this time. The primary purpose of the study was to provide both the MIS business/industry managers and the MIS faculty of colleges and universities with a timely analysis of what was perceived to be the level of agreement of the degree of importance of those critical issues in this field today and five years from today. The findings presented in this chapter represent the analysis of the respondents' perceived beliefs regarding the level of importance in the two categories.

## Plan for Gathering and Analyzing Data

### The Survey Instrument

As reported in Chapter III of this study, the questionnaire was divided into two main sections. Section one of the questionnaire contained demographic data. Section two of the questionnaire contained the items which were relevant to the main study questions (the hypotheses). Each of these sections served to provide the necessary data to fulfill the study's purpose: demographic data on each group and perceptions about the level of importance of the MIS issues both now and five years from now. The findings regarding the demographic data were reported in Chapter III as these are not relevant to the hypotheses. The main purpose for inclusion of the selected items in the demographic section was to develop a profile of the respondents in each of these groups. The items included in Section two of the questionnaire, critical MIS issues, were selected from the review of literature, including related MIS research, and current MIS college/university textbooks. These critical issues were evaluated for clarity and face validity through dissertation committee participation and the pilot study respondent input.

## Statistical Tests

Data text files which contained demographic data and responses as to the level of importance of the 31 critical issues were merged using SYSTAT (Wilkinson, 1989), a microcomputer statistical program. Using SYSTAT to perform the necessary tabulations of the responses, the pertinent statistical tests were completed. To determine the existence of a relationship between the groups on the level of importance of the critical issues, Pearson's chi-square statistic was utilized for data analysis of the responses. If more than 20 percent of the fitted cells were found to be sparse (frequency < 5), the sparse cells were combined to correct for this (Hays, 1973). If an issue was found to be statistically significant, Cramer's V statistic was utilized to report the strength of association between the two groups. For those issues not found to be statistically significant, the researcher calculated frequency percentages between the two adjacent cell categories having the greatest frequency responses. This provides a percentage estimate of the response agreement between the groups for the critical issue not found to be statistically significant.

The raw data tables used to compute the Pearson's chi-square statistical tests, the Cramer's V test, and frequency statistics are found in Appendix E (p. 141).

## Data Analysis

From the two groups, 94 usable responses were received from the sample of 389 MIS managers, and 155 usable responses were received from the sample of 346 MIS faculty. Each of these samples were randomly drawn. The analysis of data is divided into the following sections:

1. Analysis of the Pearson's chi-square calculated scores for the selected critical MIS issues found to be not significant today, including percentage frequencies of the two adjacent cells with the highest response rates
2. Analysis of the Pearson's chi-square calculated scores for selected critical MIS issues found to be not significant five years from today, including percentage frequencies of the two adjacent cells with the highest response rates
3. Analysis of the Pearson's chi-square scores for selected critical MIS issues found to be significant today, including the Cramer's V calculated score
4. Analysis of the Pearson's chi-square scores for selected critical MIS issues found to be significant five years from today, including the Cramer's V calculated score

## Analysis of Critical Issues (Today)

### Found Not-Significant

The analysis of the independent variable, MIS group affiliation, for selected critical MIS issues today provided a level of agreement between the two groups on 26 of the of the critical MIS issues contained in the study. Since there was very little difference between the level of agreement for the MIS faculty and MIS managers, adjacent cell frequency percentages were computed between the two cells reflecting maximum frequency responses. Table II reveals: chi-square scores; cell pooling (combining) between sparse cells; degrees of freedom; probabilities for chi-square scores; and frequency percentage for the two adjacent cells with maximum responses.

Seventy-seven percent of the critical MIS issues, at the present time, were found to be not significant. This means the level of agreement between the two groups on these issues was very high. These critical issues were (numbering below corresponds with questionnaire):

- (1) Management Information System (MIS) Strategic Planning
- (2) Executive Information System (EIS) Strategic Planning
- (3) Understanding the Role and Contribution of MIS to General Management

- (4) Understanding the Role and Contribution of EIS to General Management
- (5) Aiding and Facilitating Organizational Learning and Use of MIS
- (6) Using Information Systems for Competitive Advantage
- (7) Aligning the MIS Organization with that of the Parent Organization
- (8) Promoting Effective Use of the Data Resource
- (9) Developing an Information Architecture
- (10) Facilitating and Managing End-User Computing
- (11) Integrating Data Processing, Office-Automation, and Telecommunications
- (12) Planning, Implementing and Managing Telecommunications
- (13) Measuring MIS Effectiveness and Productivity
- (15) Improving the Effectiveness of Software Development
- (16) Enabling Electronic Data Interchange and Multi-Vendor Integration
- (17) Planning and Managing the Applications Portfolio
- (20) Selecting and Integrating Packaged Applications Software
- (21) Improving Information Security and Control
- (23) MIS Ethics

- (24) The Impact of Personal Computers in an Institutional Environment
- (25) The Impact of Decision Support Systems
- (26) The Impact of Hardware/New Technologies
- (28) Managing new Software Technologies (i.e. 4GL's, CASE)
- (30) Managing the User Services Center



TABLE II

RELEVANT CALCULATED STATISTICS FOR CRITICAL MIS  
ISSUES FOUND NOT SIGNIFICANT "TODAY"  
(Issue numbering corresponds with critical MIS  
issue numeration on questionnaire)

Issue	Chi-Square	Degrees of Freedom	Probability
1	5.606	2	.061
2	2.435	4	.656
3	5.392	3	.145
4	8.047	4	.090
5	7.790	3	.051
6	4.656	4	.324
7	6.614	4	.158
8	3.670	3	.299
9	7.495	4	.112
10	1.772	3	.621
11	2.539	3	.468
12	1.040	3	.792
13	3.434	4	.488
15	4.249	4	.373
16	0.333	4	.988
17	8.578	4	.073
20	5.117	4	.276
21	1.781	4	.776
23	5.967	4	.202
24	1.901	4	.754
25	2.916	4	.572
26	5.171	3	.160
28	5.665	4	.226
30	3.186	4	.527

\*To facilitate statistical analysis, cell data were pooled if more than 20 percent of the cells had frequencies of less than five. This resulted in varying degrees of freedom. In all cases, the cells pooled were from the not important, of little importance, or somewhat important categories.

Of the 24 critical issues found not to be significant today, the majority of responses from the MIS faculty

respondents for each of these 24 issues were from the three top categories of level of importance. Cell analysis indicates that for 20 of the issues (83 percent) the MIS Faculty reported the level of importance to be somewhat important or important. The remaining 17 percent of these issues were reported by this group to be important or very important. The MIS manager respondents also reported the level of importance to primarily fall within the same top three categories of level of importance. However, they reported that 73 percent of these issues fall within the somewhat important or important categories and 27 percent fall within important or very important categories. These percentages were computed using the following formula:

$$\text{Frequency Percentage} = \frac{\text{sum of two adjacent adjacent cells with highest responserate}}{\text{total number of responses for group}}$$

Table III provides the frequency percentage breakdown for these 24 non-significant critical issues "today".

TABLE III

FREQUENCY PERCENTAGES FOR CRITICAL MIS ISSUES FOUND  
 NOT SIGNIFICANT TODAY  
 (issue numeration corresponds with questionnaire)

Issue	MIS Group	Cells Summed	Percent of Responses
1	Faculty Managers	4, 5	80
		4, 5	66
2	Faculty Managers	3, 4	62
		3, 4	66
3	Faculty Managers	4, 5	67
		4, 5	79
4	Faculty Managers	3, 4	62
		3, 4	62
5	Faculty Managers	3, 4	68
		3, 4	80
6	Faculty Managers	4, 5	72
		4, 5	82
7	Faculty Managers	3, 4	65
		4, 5	64
8	Faculty Managers	3, 4	66
		4, 5	72
9	Faculty Managers	3, 4	67
		3, 4	66
10	Faculty Managers	4, 5	71
		3, 4	69
11	Faculty Managers	3, 4	69
		3, 4	63
12	Faculty Managers	3, 4	68
		3, 4	70
13	Faculty Managers	3, 4	65
		3, 4	76
15	Faculty Managers	3, 4	68
		4, 5	73

TABLE III (Continued)

Issue	MIS Group	Cells Summed	Percent of Responses
16	Faculty	3, 4	68
	Managers	3, 4	70
17	Faculty	3, 4	74
	Managers	3, 4	79
20	Faculty	3, 4	80
	Managers	3, 4	73
21	Faculty	3, 4	66
	Managers	3, 4	63
23	Faculty	3, 4	55
	Managers	4, 5	61
24	Faculty	3, 4	72
	Managers	3, 4	71
25	Faculty	3, 4	78
	Managers	3, 4	78
26	Faculty	3, 4	78
	Managers	3, 4	76
28	Faculty	3, 4	83
	Managers	3, 4	73
30	Faculty	3, 4	77
	Managers	3, 4	68

Analysis of Critical Issues (Five Years  
From Today) Found Not-Significant

The analysis of the independent variable, MIS group affiliation, for selected critical MIS issues five years from today provided a level of agreement between the two

groups on 18 of the critical MIS issues contained in the study. Again, the difference between the level of agreement for the MIS faculty and MIS managers was very little. Therefore, adjacent cell frequency percentages were computed between the two cells reflecting the highest frequency responses. Table IV reveals: chi-square scores; degrees of freedom; and probabilities for chi-square scores for these issues.

This table illustrates that 58 percent of the critical MIS issues, five years from today, were found to be not significant. This means the level of agreement between the two groups on these issues was moderately high. These critical issues were (numbering below corresponds with questionnaire):

- (1) Management Information System (MIS) Strategic Planning
- (2) Executive Information System (EIS) Strategic Planning
- (3) Understanding the Role and Contribution of MIS to General Management
- (4) Understanding the Role and Contribution of EIS to General Management
- (7) Aligning the MIS Organization with that of the Parent Organization
- (8) Promoting Effective Use of the Data Resource
- (9) Developing an Information Architecture

- (10) Facilitating and Managing End-User Computing
- (12) Planning, Implementing and Managing  
Telecommunications
- (13) Measuring MIS Effectiveness
- (15) Improving the Effectiveness of Software Development
- (16) Enabling Electronic Data interchange and Multi-  
Vendor Integration
- (17) Planning and Managing the Applications Portfolio
- (20) Selecting and Integrating Packaged Applications  
Software
- (21) Improving Information Security and Control
- (23) MIS Ethics
- (24) The Impact of Personal Computers in an Institutional  
Environment
- (25) The Impact of Decision Support Systems

TABLE IV

RELEVANT CALCULATED STATISTICS FOR CRITICAL MIS  
ISSUES FOUND NOT SIGNIFICANT FIVE YEARS FROM TODAY  
(Issue numbering corresponds with critical MIS issue  
numeration on questionnaire)

Issue	Chi-Square	Degrees of Freedom	Probability
1	0.474	2	.789
2	6.868	3	.076
3	3.330	3	.343
4	8.516	4	.074
7	5.370	4	.251
8	1.546	2	.462
9	5.928	3	.115
10	3.922	3	.270
12	1.257	3	.739
13	2.074	4	.722
15	2.078	3	.556
16	3.209	3	.360
17	4.356	4	.360
20	8.398	4	.078
21	3.954	3	.266
23	5.601	4	.231
24	6.778	4	.148
25	3.139	4	.535

\*To facilitate statistical analysis, cell data were pooled if more than 20 percent of the cells had frequencies of less than five. This resulted in varying degrees of freedom. In all cases, the cells pooled were from the not important, of little importance, or somewhat important categories.

Of the 18 critical issues found to be not significant five years from today, the majority of responses from the MIS Faculty respondents for each of these 18 issues were from the three top categories of level of importance. Cell analysis indicated that for 11 of the issues (61 percent)

the MIS faculty more often reported the level of importance to be important or very important. The remaining 7 issues (39 percent) were reported by this group more often to be somewhat important or important. The MIS manager respondents reported more often that the level of importance of these issues fell within the important or very important categories 83 percent (15 issues) of the time. The remaining 17 percent (3 issues) of the issues were reported more often to fall within the somewhat important or important categories. These percentages were computed using the same formula presented in the previous section. Table V provides the frequency percentage breakdown for these 18 non-significant critical issues "five years from today".

TABLE V

FREQUENCY PERCENTAGES FOR CRITICAL MIS ISSUES FOUND  
NOT SIGNIFICANT FIVE YEARS FROM TODAY  
(Issue numbering corresponds with critical MIS issue

Issue	MIS Group	Cells Summed	Percent of Responses
1	Faculty	4, 5	91
	Managers	4, 5	93
2	Faculty	4, 5	67
	Managers	4, 5	82
3	Faculty	4, 5	76
	Managers	4, 5	84
4	Faculty	3, 4	65
	Managers	4, 5	69
7	Faculty	3, 4	59
	Managers	4, 5	66



TABLE V (Continued)

Issue	MIS Group	Cells Summed	Percent of Responses
8	Faculty Managers	4, 5	72
		4, 5	79
9	Faculty Managers	3, 4	65
		4, 5	78
10	Faculty Managers	4, 5	70
		4, 5	74
12	Faculty Managers	4, 5	76
		4, 5	82
13	Faculty Managers	3, 4	65
		3, 4	68
15	Faculty Managers	4, 5	70
		4, 5	77
16	Faculty Managers	4, 5	74
		4, 5	72
17	Faculty Managers	3, 4	71
		3, 4	75
20	Faculty Managers	3, 4	65
		3, 4	62
21	Faculty Managers	4, 5	77
		4, 5	66
23	Faculty Managers	4, 5	64
		4, 5	70
24	Faculty Managers	3, 4	51
		4, 5	66
25	Faculty Managers	4, 5	60
		4, 5	68

Analysis of Critical Issues (Today)Found Significant

The independent variable analysis of MIS group affiliation on the relationship between the level of importance of selected critical MIS issues today resulted in statistically significant results for seven of the selected 31 MIS critical issues and reflected a divergence between the two groups as to their agreement on the level of importance of these issues. These seven issues were (numbering corresponds with questionnaire issue numeration):

- (14) Specifying, Recruiting, and Developing MIS Human Resources
- (18) Planning, Implementing, and Managing Factory Automation
- (19) Determining Appropriate MIS Funding Levels
- (22) Managing the Impact of Artificial Intelligence/Expert Systems
- (27) Promoting Management of the Data Resource
- (29) Communicating with End-users
- (31) Communicating with Upper-level Management

Table VI reports: calculated chi-square score; degrees of freedom; probabilities for chi-square score; and Cramer's V statistic for these six statistically significant issues.

TABLE VI

RELEVANT CALCULATED STATISTICS FOR CRITICAL MIS  
ISSUES FOUND SIGNIFICANT "TODAY"  
(Issue numbering corresponds with critical MIS  
issue numeration on questionnaire)

Issue	Chi-Square	Degrees of Freedom	Probability	Cramer's V
14	14.069	3	.003	.238
18	18.588	4	.001	.273
19	9.915	4	.042	.200
22	19.234	4	.001	.278
27	7.878	3	.049	.178
29	21.832	3	.000	.296
31	30.873	4	.000	.352

\*To facilitate statistical analysis, cell data were pooled if more than 20 percent of the cells had frequencies of less than five. This resulted in varying degrees of freedom. In all cases, the cells pooled were from the not important, or of little importance categories.

Analysis of Contingency Table Frequencies for

Significant MIS Critical Issues Today. Appendix E reports the frequency of responses by category for each issue.

Based on the information contained in this table, MIS faculty respondents reported they perceived specifying, recruiting, and developing MIS human resources to be of less importance today than did MIS manager respondents.

Planning, implementing, and managing factory automation and

Planning, implementing, and managing factory automation and determining appropriate MIS funding levels were reported more important by MIS managers than by MIS faculty. The MIS faculty respondents reported managing the impact of artificial intelligence/expert systems to be of more importance than did the MIS managers respondents, but MIS manager respondents reported the level of importance to be greater for promoting management of the data resource and communicating with end-users than did MIS faculty respondents. MIS manager respondents reported the level of importance to be greater for communicating with upper-level management than did MIS Faculty respondents.

Analysis of Critical MIS Issues (Five Years from Today) Found Significant

The independent variable analysis of MIS group affiliation of the relationship between the level of importance of critical MIS issues five years from today resulted in statistically significant results for 13 of the selected 31 MIS critical issues and reflected a divergence between the two groups as to their agreement on the level of importance of these issues. These 13 issues were (numbering corresponds with questionnaire issue numeration):

- (5) Aiding and Facilitating Organizational Learning and Use of MIS

- (11) Integrating Data Processing, Office-Automation,  
and Telecommunications
- (14) Specifying, Recruiting, and Developing MIS Human  
Resources
- (18) Planning, Implementing, and Managing Factory  
Automation
- (19) Determining Appropriate MIS Funding Levels
- (22) Managing the Impact of Artificial  
Intelligence/Expert Systems
- (26) The Impact of Hardware/New Technologies
- (27) Promoting Management of the Data Resource
- (28) Managing new Software Technologies (i.e. 4GL's,  
CASE)
- (29) Communicating with End-users
- (30) Managing the User Services Center
- (31) Communicating with Upper-Level Management

Table VII reports: calculated chi-square score; degrees of freedom; probabilities for chi-square score; and Cramer's V statistic for these 13 statistically significant issues.

TABLE VII

RELEVANT CALCULATED STATISTICS FOR CRITICAL MIS  
ISSUES FOUND SIGNIFICANT FIVE YEARS FROM TODAY  
(Issue numbering corresponds with critical MIS issue  
numeration on questionnaire)

Issue	Chi-Square	Degrees of Freedom	Probability	Cramer's V
5	16.379	3	.001	.256
6	8.797	3	.032	.188
11	8.343	3	.039	.183
14	18.287	3	.000	.271
18	17.979	4	.001	.269
19	15.998	4	.003	.253
22	23.685	4	.000	.308
26	21.767	4	.000	.296
27	14.285	3	.003	.240
28	8.416	3	.038	.184
29	19.429	3	.000	.279
30	10.908	4	.028	.209
31	27.399	2	.000	.332

\*To facilitate statistical analysis, cell data were pooled if more than 20 percent of the cells had frequencies of less than five. This resulted in varying degrees of freedom. In all cases, the cells pooled were from the not important, of little importance, or somewhat important categories.

Analysis of Contingency Table Frequencies for  
Significant MIS Critical Issues Five Years From Today.

Appendix E reports the frequency of responses by category for each issue. The frequency of responses for each group, as indicated in the contingency tables for the individual issues in Table VII show that the MIS faculty respondents perceived only one of these statistically significant issues to be more important than did MIS manager respondents. This issue was managing the impact of artificial intelligence/expert systems (issue 22). In all other instances, the MIS manager respondents reported they perceived the level of importance to be greater than did the MIS faculty. These issues were: (5) Aiding and Facilitating Organization Learning and Use of MIS; (6) Using Information Systems for Competitive Advantage; (11) Integrating Data Processing, Office-Automation, and Telecommunications; (14) Specifying, Recruiting, and Developing MIS Human Resources; (18) Planning, Implementing, and Managing Factory Automation; (19) Determining Appropriate MIS Funding Levels; (26) The Impact of Hardware/New Technologies; (27) Promoting Management of the Data Resource; (28) Managing new Software Technologies (i.e. 4GL's, CASE); (29) Communicating with End-users; (30) Managing the User Services Center, and; (31) Communicating with Upper-Level Management.

## Summary

Questionnaires were mailed to 347 randomly selected MIS faculty and 389 randomly selected MIS managers in order to obtain data necessary to determine (1) if significant differences existed between the two groups as to their perceived beliefs of the level of importance of selected MIS critical issues today and (2) if significant differences existed between the two groups as to their perceived beliefs of the level of importance of selected MIS critical issues five years from today.

Statistical tests were conducted on 155 usable responses from the MIS faculty respondents and 94 usable responses from the MIS managers respondents in order to analyze the following:

1. Analysis of the Pearson's chi-square calculated scores for the critical MIS issues found to be not significant today, including percentage frequencies of the two adjacent cells with the highest response rates
2. Analysis of the Pearson's chi-square calculated scores for the critical MIS issues found to be not significant five years from today, including percentage frequencies of the two adjacent cells with the highest response rates



3. Analysis of the Pearson's chi-square scores for critical MIS issues found to be significant today, including the Cramer's V calculated score
4. Analysis of the pearson's chi-square scores for critical MIS issues found to be significant five years from today, including the Cramer's V calculated score

Analysis of statistical tests revealed no significant differences between perception of level of importance of the two groups for 24 of the selected MIS critical issues today (see Table II, p. 66). For the selected MIS critical issues five years from today there were eleven issues found to be not significant between the perception of level of importance of the two groups see Table IV (p. 72). Therefore, for these issues, the null hypotheses cannot be rejected. Statistically significant differences were found between the two groups as to their difference in perception of the level of importance for 6 of the selected MIS critical issues today (see Table VI, p. 76). And, statistically significant differences were found between the two groups as to their difference in perception of the level of importance for 13 of the selected MIS critical issues (see Table VII, p. 79). For these issues, the null hypotheses were rejected.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

In this "age of information" organizations of all types and sizes are increasingly devoting scarce resources to collecting, manipulating, storing, and processing this information (Awad, 1988). Information is used to make critical decisions about the structure and focus of the organization; but, in any competitive environment efficient resource allocation is crucial to the success of the organization. A Management Information System department's ability to provide management with timely information is subject to the same efficiency constraints faced by any other area of the organization. Therefore, the need for and the type of information, plus the cost of obtaining the information, serve to determine the critical MIS issues from the standpoint of the organization. It becomes the MIS manager's responsibility to determine what the critical MIS objectives should be as dictated by the needs of the organization.

At the same time, educational institutions must make decisions as to appropriate curriculum development in all fields of study, including MIS. While organizations must

make their resource allocation for the MIS department based on particular internal and external factors affecting their particular organization, MIS departments and faculty must generally decide appropriate course and curricular content based on a more widespread and general set of factors in order to meet various organizational needs.

The question that arises is should the variables affecting MIS organizations in the private sector completely dictate this curricular content for the MIS educational departments, as well as their approach to educating future MIS managers due to the organizational differences and needs? Educational institution resource constraints prevent these institutions from meeting all of the needs of the private sector for completely trained MIS personnel. However, through an assessment of the agreement of opinion between the groups, those areas identified as critical to the majority of managers and faculty could be used to develop core curriculum areas of study.

Previous research has reported areas of critical importance in the field of MIS as indicated by MIS managers. However, the lack of inclusion of MIS faculty in this research reflects an omission of one of the main factors necessary in preparing future MIS managers for positions in the private sector. If the collegiate MIS curriculum is going to provide industry with adequately qualified personnel, at least in a broad sense, both MIS faculty and

MIS managers need timely information indicating critical MIS areas of agreement between the two groups.

By using Pearson's Chi-square to determine the level of agreement between MIS faculty respondents and MIS manager respondents on selected MIS critical issues, those areas of agreement and disagreement as to the level of importance of the selected MIS issues were identified for both today and five years from today. Based on the results of the statistical tests completed in this study, areas of agreement and disagreement of critical MIS issues between the two groups were identified as to their level of importance. This may be used to aid in educational curriculum development or to encourage further research.

## Summary

### Procedures

To obtain the necessary data to determine (1) if statistically significant differences existed between MIS faculty and MIS managers as to their level of agreement on selected critical MIS issues today and (2) if statistically significant differences existed between MIS faculty and MIS managers as to their level of agreement on selected critical MIS issues five years from today, survey instruments were mailed. These were mailed to 349 MIS faculty from randomly selected members using the 1989 Directory of Management Information Systems Faculty in the United States and Canada

and 389 MIS managers from randomly selected members using the the 1988 Directory of Top Computer Executives as representative populations for each group. One-hundred-fifty-five usable questionnaires were returned from the MIS faculty group and 94 usable questionnaires were returned from the randomly selected MIS manager group. These returned questionnaires provided both demographic data and respondent level of agreement of the 31 selected critical MIS issues.

Through the analysis of demographic data collected from Section I of the information of each of the two groups, basic profiles of these groups were developed. Following a review of literature, dissertation committee input, and a pilot study, the 31 MIS critical issues were organized into the second section of the survey instrument.

In regard to the level of importance of the selected critical MIS issues included in the second section of the questionnaire, respondents were asked to identify their perceived beliefs as to the level of importance of these issues today and five years from today. This was completed by using a Likert-type scale ranging from "not important" to "very important" for each of the issues. This method produced frequency data which could be used to determine statistical significance using the Pearson's chi-square test of relationship. The Cramer's V statistic was also performed on those issues which were found to be

statistically significant to determine the strength of the relationship.

### Results of the Study

Through the analysis of the demographic data provided in Section I of the questionnaire, the researcher was able to develop a basic profile of the respondents of each group. While these items are not relevant to the main study questions, they do provide relevant data as to the backgrounds and classifications of these two groups. Data pertinent to the main study questions provided levels of agreement on the critical MIS issues. Comparisons used in this study and others should be made with caution because of the techniques for acquiring data, the survey instrument items, and the sample groups used.

### Demographic Data Revealed in Section I

Chapter III reported the demographic item frequency results for each group which were not relevant to the main study questions. For the MIS manager group, frequency responses were calculated from the respondents and these categories include: primary business purpose; geographic region; annual MIS/DP budget (including telecommunications); number of MIS/DP departmental employees; level of education; major of highest college degree earned; and, annual salary or the respondents. For the MIS faculty group respondents

frequency responses were calculated and these categories include: current faculty position; highest level of college/university degree earned; present academic department affiliation; current or previous private sector affiliation; academic courses currently taught; college/university undergraduate enrollment; MIS degrees offered; and title of doctorate offered at relevant institution (if one was offered).

#### Data Revealing MIS Manager Demographic Description

In Chapter III demographic items about the MIS Managers not relevant to the main study questions were discussed. The information discussed in this chapter about this group is summarized on the following pages including graphic representation where appropriate.

Primary Business Purpose. MIS Manager respondents indicated their primary business purpose to fall within two of the designated categories. These were: manufacturing and other. Figure 1 depicts the entire distribution of responses to this questionnaire item.

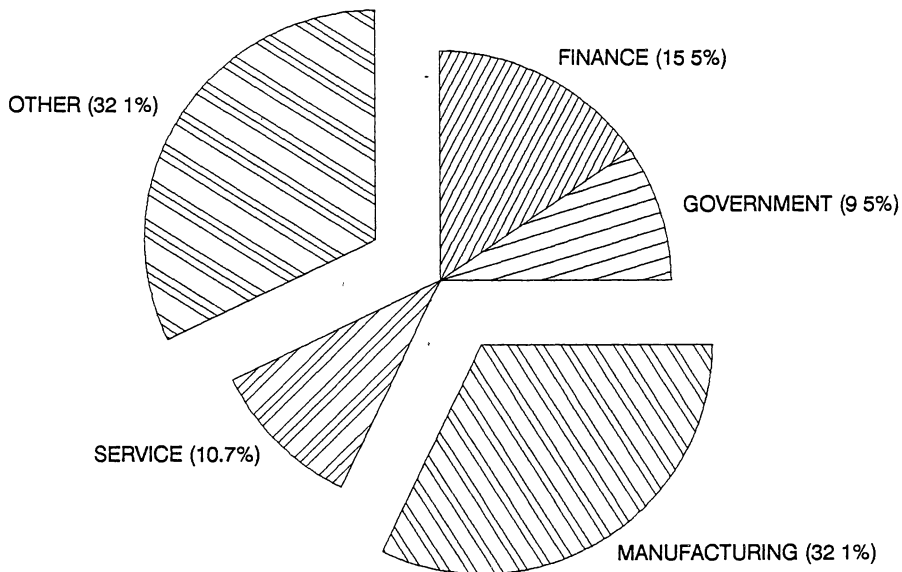


Figure 1. Primary Business Purpose as Specified by MIS Manager Respondents



Geographic Region. The majority of the responses from this group came from the North Central region, followed by the Eastern region. Figure 2 pictured below illustrates a complete percentage breakdown of the categories included in this questionnaire item.

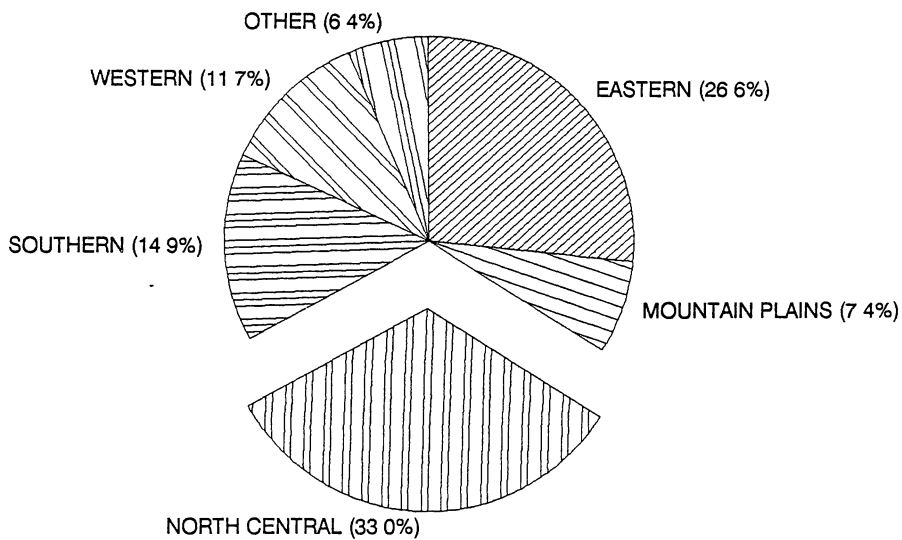


Figure 2. Geographic Region in Which MIS Manager Respondents Indicated They Were Currently Working

Annual MIS/DP Budget (including Telecommunications).

MIS Manager respondents indicated that the fifth MIS/DP budget category ( \$1,000,001-\$5,000,000) had the highest response percentage, followed by the sixth category (greater than \$5,000,000). Based on this information, the level of MIS/DP budget reflected by the respondents falls into the two highest categories. Figure 3 illustrates a complete breakdown of this categories percentages.

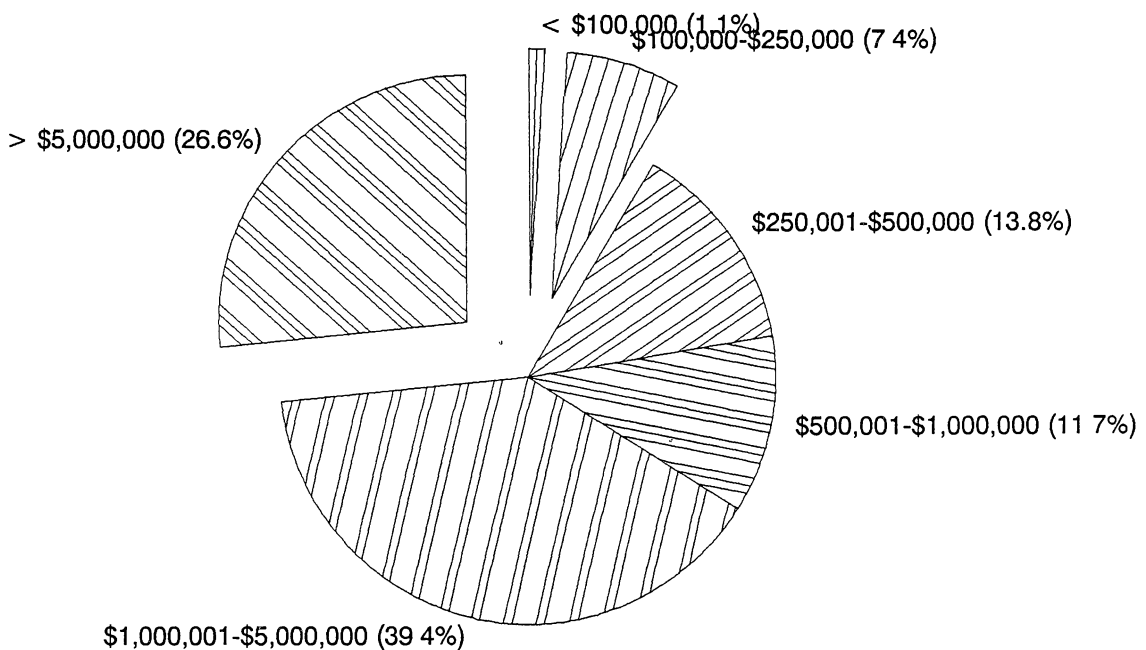


Figure 3. Annual Company MIS/DP Budget Including Telecommunications Indicated by MIS Manager Respondents

Number of MIS/DP Departmental Employees. Respondents from the MIS Manager group more often reported that their departments employed 11-50 employees. Category one (1-10 employees) was the second highest frequency group. By observing Figure 4, a complete percentage breakdown for all categories is depicted for this questionnaire item.

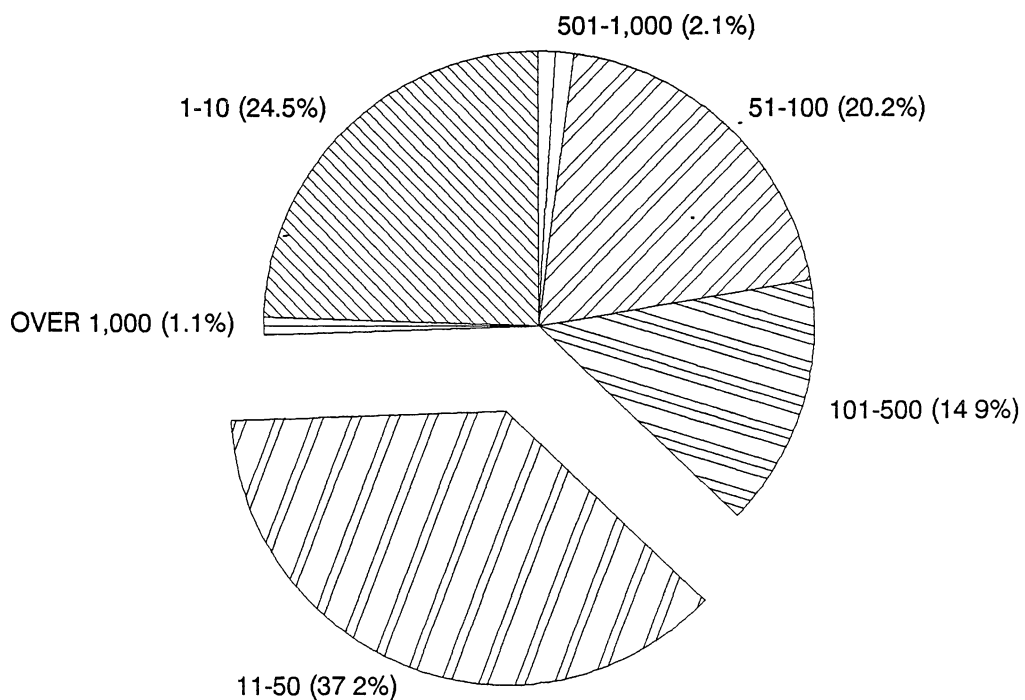


Figure 4. Number of Employees Currently Employed In Company  
MIS/DP Department

Level of MIS Respondent Education. Based on the replies of the respondents, the most frequently cited earned educational degree was a 4-year college degree (44.7 percent). The remaining category frequency percentages are included in the following figure (5).

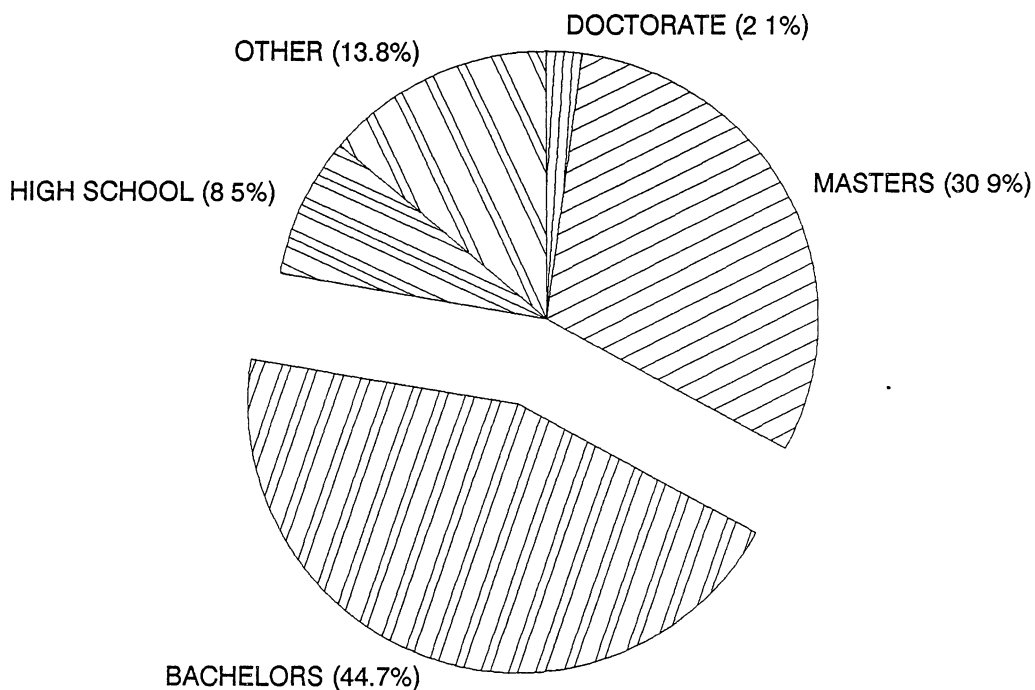


Figure 5. Level of MIS Manager Education

College Major of MIS Respondent. Business/accounting was the most often reported college major by the respondents in this group. This was followed by the "other" category. Complete frequency percentage distributions are depicted Figure 6 for all included categories.

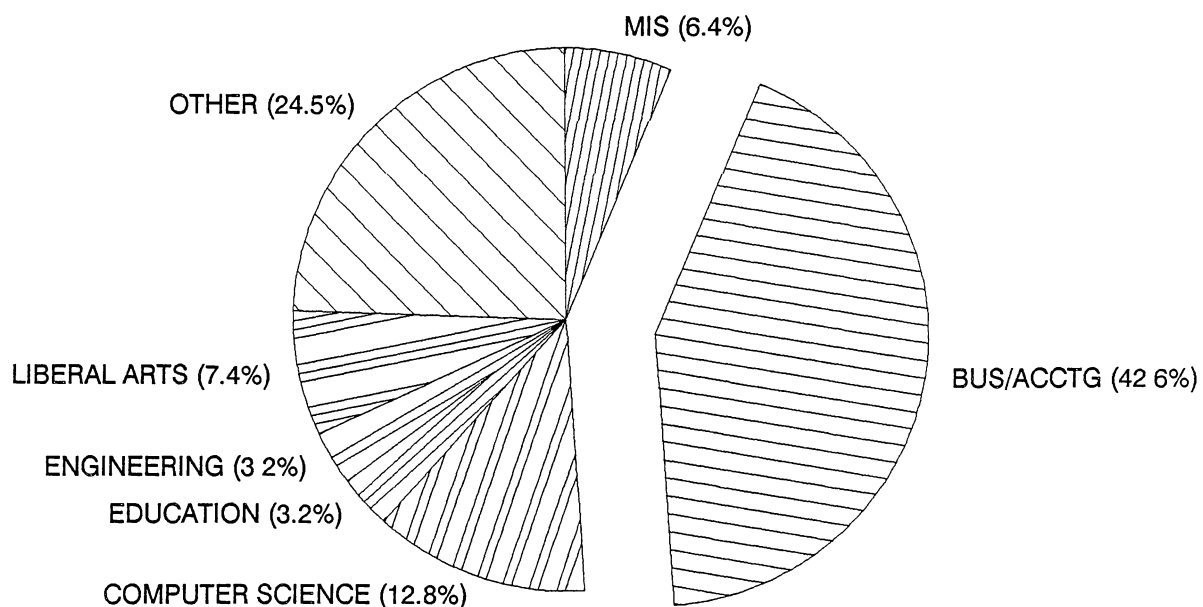


Figure 6. College Major Identified by MIS Manager Respondents

Annual Reported Salary of MIS Manager Respondents.

None of the respondents in this group reported their annual salary to be from the first two categories. This is probably due to the level of experience, necessary qualifications, and prestige associated with such a management position. The category which received the highest response rate was category four (\$50,000-\$59,999). As can be seen from Figure 7, however, the salary range for this level of management position is fairly evenly distributed and quite high, based on the responses from the MIS manager respondents.

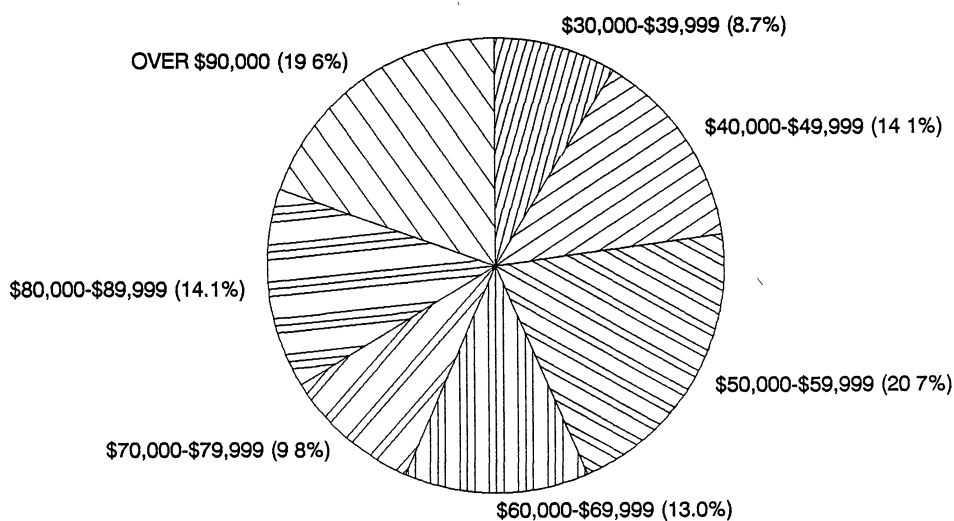


Figure 7. Annual Reported Salary of MIS Manager Respondents

Data Revealing MIS Faculty Demographic Description

Current Faculty Position. Figure 8 illustrates the distribution of the percentage frequencies for this questionnaire item (MIS faculty group). As can be seen from the graph, there was a fairly even distribution between responses for the first three categories. The remaining categories were negligible.

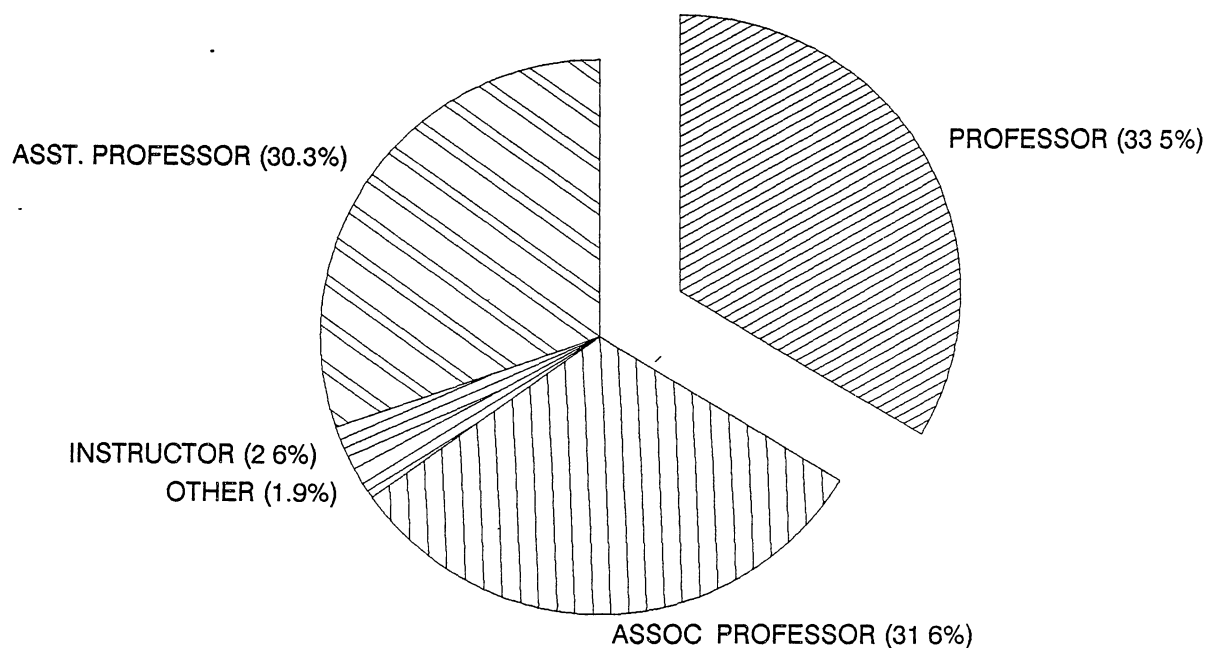


Figure 8. Current Faculty Position Specified by MIS Faculty Respondents

Highest Level of College/University Degree Earned. As the pie-chart below indicates (Figure 9), the respondents in this group indicated overwhelmingly that the terminal level of education earned was at the doctoral level (87.1 percent).

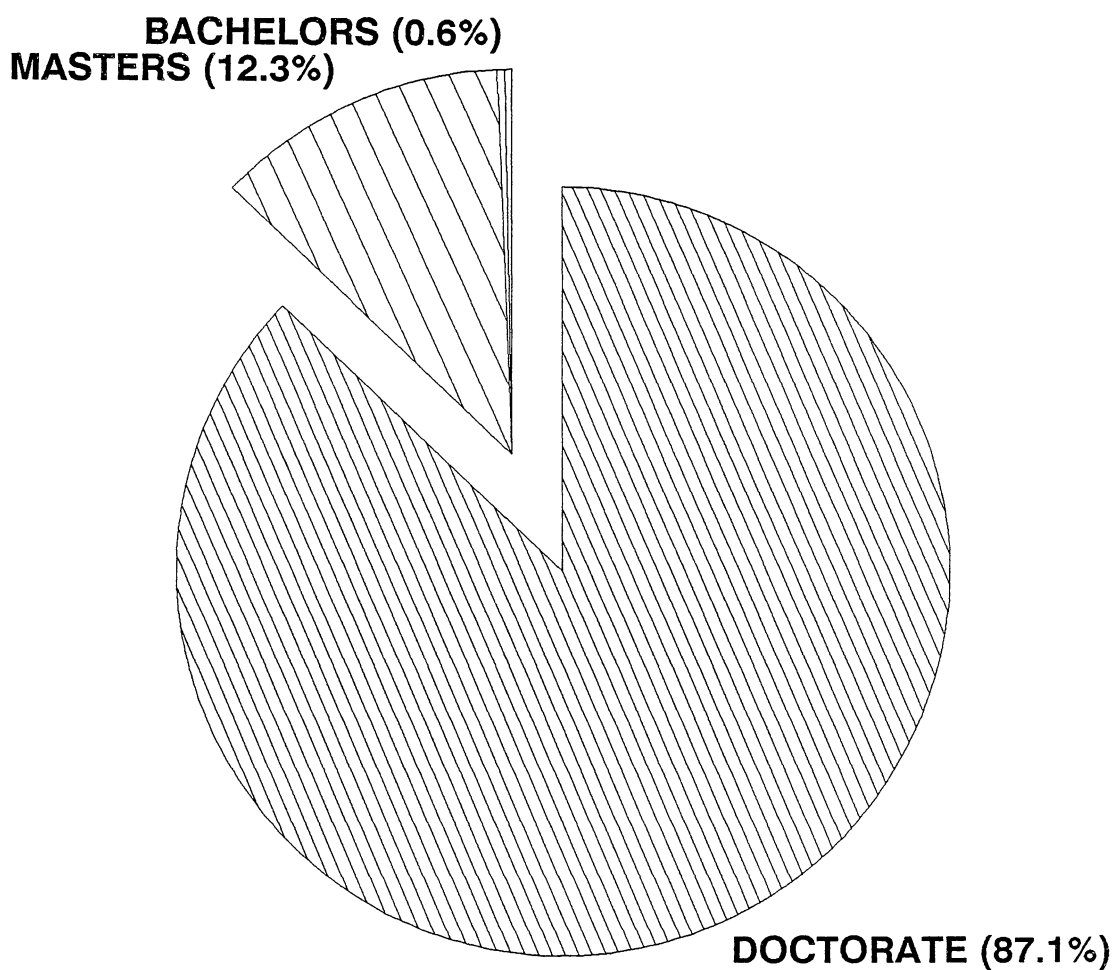


Figure 9. Highest Earned Academic Degree Specified by MIS Faculty Respondents



Present Academic Department Affiliation. The most frequently cited academic department for this group was MIS (54.8 percent). Tables XIX (p.145) and XX (p. 145) illustrate the frequency distribution for the complete respondents as well as those areas specifically indicated as "other".

Previous or Current Private Sector Experience. Those MIS faculty respondents who indicated they had experience, past or present, in the private sector reported more often having experience in systems development, consulting, education and training, and general MIS management. Table XXI (p. 146), provides a complete breakdown of the frequency responses.

Courses Currently Taught. With the exception of the "other" category (with a frequency percent response rate of 24.22), the specific categories indicated as most often taught include: MIS; Systems Analysis and Design; Microcomputer Applications; and Programming. These specific responses, as well as "other" frequency responses, are reported in Table XXIII, page 147.

Undergraduate Institution Enrollment. Based on the responses provided by this group, the most frequently reported category of undergraduate enrollment was "greater than 6,000." (See Figure 10 for a complete category percent breakdown.)

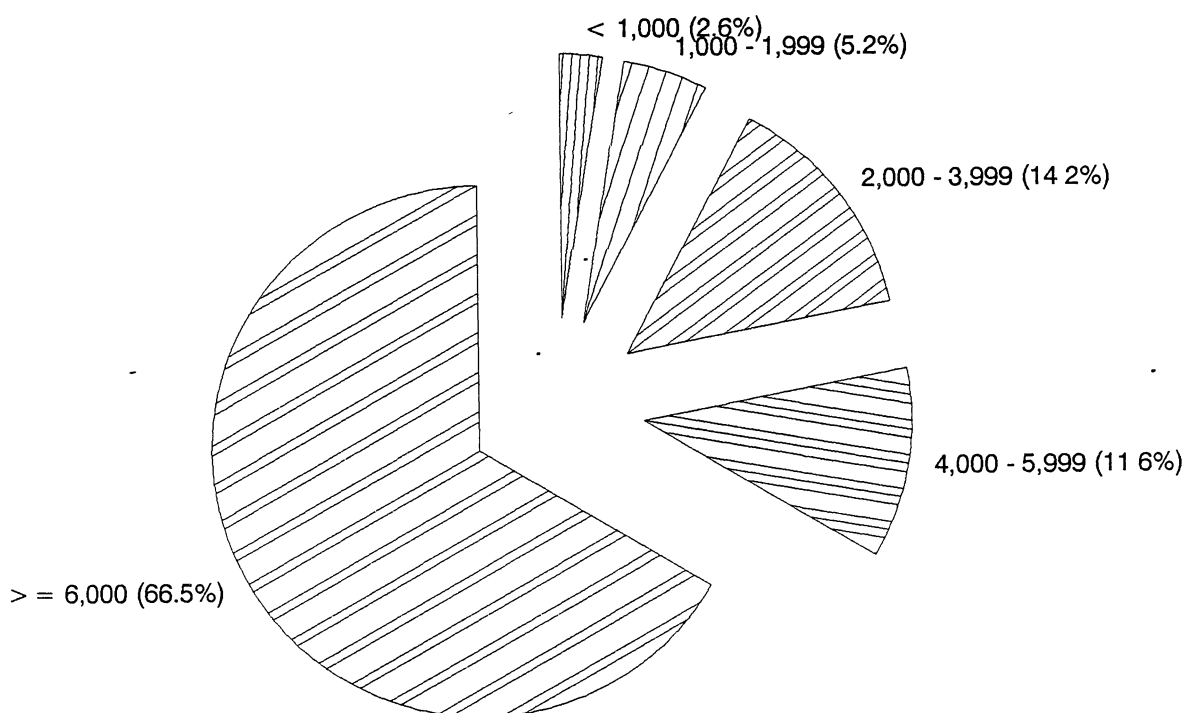


Figure 10. Undergraduate Institution Enrollment as Specified by MIS Faculty Respondents

MIS Degrees Offered and Relevant Doctoral Degree Title.

Table XXVI, page 149, illustrates the percent of institutions that offer Bachelor degrees in MIS, Masters Degrees in MIS, and Doctorates in MIS. In addition, if an institution does offer a doctorate in the MIS field, Figure 11 depicts the frequency percent rate for the specified degree titles.

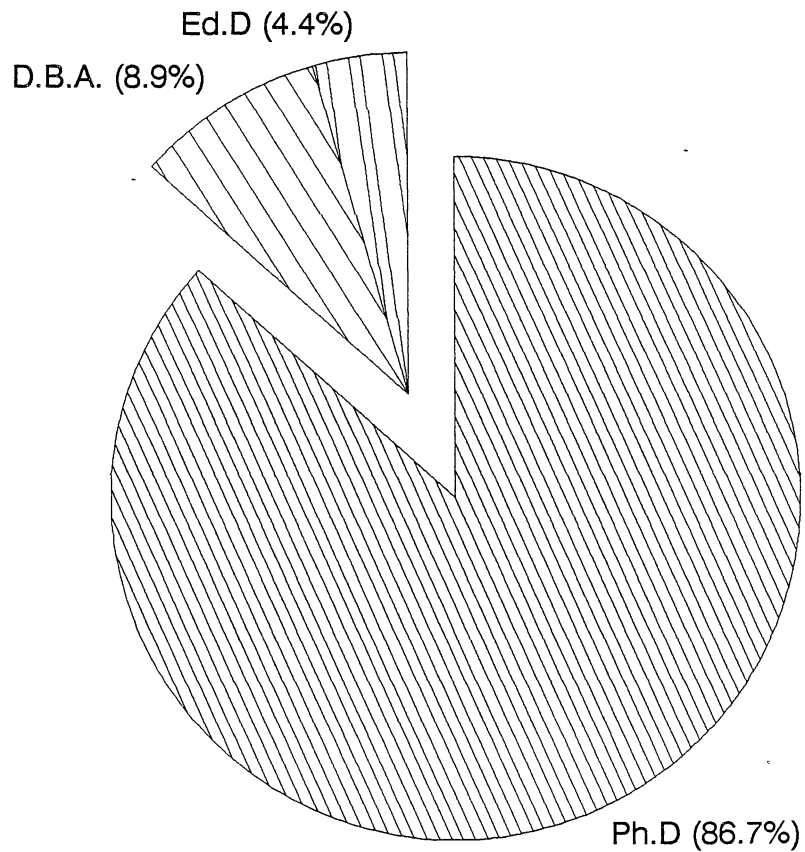


Figure 11. Type of Doctorate Conferred at Institutions  
Indicating This Degree Offered as Specified  
by MIS Faculty Respondents

## Data Pertinent to Main Study Questions

Analysis of Critical Issues (Today) Found Not Significant. Independent variable analysis for the selected critical MIS issues "today" found 24 of the critical MIS issues contained in the study to be not significant. For these issue, then, the level of agreement between MIS faculty and MIS managers was consistent between the groups. They reported the level of agreement to fall within the somewhat important, important, or very important categories. Table II (p. 78) lists the specific issues which fell into this category.

Analysis of Critical Issues (Five Years From Today) Found Not Significant. Eighteen of the selected MIS critical issues were found to be not significant five years from today. Again, the level of agreement between the groups fell within the same three categories; somewhat important, important, or very important. (Table IV, p. 84.)

Analysis of Critical Issues (Today) Found Significant. Seven selected critical MIS issues were found to be significant (Table VI, p. 88). For these issues the groups differed on their as to the level of importance.

Analysis of Critical MIS Issues (Five Years from Today) Found Significant.

Independent variable analysis of MIS group affiliation determined 13 of the selected critical MIS issues to be

statistically significant (See Table VII, p. 91). This means, therefore, that for these issues the groups disagreed as to the level of importance of the issues.

### Conclusions

The conclusions presented here are based on the descriptive analysis of demographic data of MIS faculty and MIS managers, as well as the analysis of statistically non-significant and significant selected MIS critical issues (as they pertain to the main study questions).

1. The necessity for graduate level education is not apparently necessary for the position of MIS manager.
2. A four-year college degree is usually necessary to obtain the position of MIS manager.
3. At the present time, a degree in MIS is not necessary for individuals to obtain a position in MIS management, but this may change in the future with growth in MIS programs.
4. The completion of a doctorate level degree is usually necessary to obtain a college/university faculty position in the field of MIS.
5. Understanding the level of agreement between MIS faculty and MIS management fills the need for corporate and academic decision making about research, curriculum, and professional programs.

6. Based on the level of agreement between MIS managers and MIS faculty on many of the selected critical MIS issues, these areas should be included in MIS curriculum and professional educational programs.
7. A four-year degree in the major field of business usually necessary to obtain the position of MIS managers.

### Recommendations

The need for private sector organizations and educational institutions to increase communication on the critical MIS issues of today and in the future is based on the results of this study.

#### Future Study

1. While the current study provided levels of agreement and disagreement between MIS Managers and MIS Faculty on selected MIS critical issues, the survey instrument may not have included all critical MIS issues for today and five years from today. Therefore, it is recommended that a study be done to obtain present and future areas of critical concern which may not have been included.
2. In order to determine if those critical MIS issues which were found to have a high level of agreement between the groups are included in specific curricula

content, it is recommended that future study be done to determine specific issues included in MIS curricula.

3. In order to determine if MIS graduates are adequately trained in the critical issues for this field, it is recommended that future study be done to elicit present MIS management satisfaction as to the MIS preparation recent graduates have received.

### Future Practice

1. In order to maintain and encourage communication between MIS Faculty and MIS Managers, it is recommended that academia and industry establish outreach programs for this purpose.
2. In order to provide organizations with MIS graduates who have received MIS education which included core areas perceived critical by industry, it is recommended that MIS academics continue to develop core curricula content based on current research in this area.

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APPENDIX A

MIS CRITICAL ISSUE SURVEY ITEMS TODAY  
AND FIVE YEARS FROM TODAY

TABLE VIII  
MIS CRITICAL ISSUE SURVEY ITEMS TODAY  
AND FIVE YEARS FROM TODAY

Issue Number	Description
1	Management Information System (MIS) Strategic Planning
2	Executive Information System (EIS) Strategic Planning
3	Understanding the Role and Contribution of MIS to General Management
4	Understanding the Role and Contribution of EIS to General Management
5	Aiding and Facilitating Organizational Learning and Use of MIS
6	Using Information Systems for Competitive Advantage
7	Aligning the MIS Organization with that of the Parent Organization
8	Promoting Effective Use of the Data Resource
9	Developing an Information Architecture
10	Facilitating and Managing End-User Computing
11	Integrating Data Processing, Office-Automation, and Telecommunications
12	Planning, Implementing, and Managing Telecommunications
13	Measuring MIS Effectiveness and Productivity
14	Specifying, Recruiting, and Developing MIS Human Resources
15	Improving the Effectiveness of Software Development

TABLE VIII (Continued)

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Issue Number	Description
16	Enabling Electronic Data Interchange and Multi-Vendor Integration
17	Planning and Managing the Applications Portfolio
18	Planning, Implementing, and Managing Factory Automation
19	Determining Appropriate MIS Funding Levels
20	Selecting and Integrating Packaged Applications Software
21	Improving Information Security and Control
22	Managing the Impact of Artificial Intelligence/Expert Systems
23	MIS Ethics
24	The Impact of Personal Computers in an Institutional Environment
25	The Impact of Decision Support Systems
26	The Impact of Hardware/New Technologies
27	Promoting Management of the Data Resource
28	Managing new Software Technologies (i.e. 4GL's, CASE)
29	Communicating with End-users
30	Managing the User Services Center
31	Communicating with Upper-Level Management
32	Other

---

APPENDIX B  
SURVEY INSTRUMENTS

# MIS MANAGER'S SURVEY

## Demographic Data

Control Code \_\_\_\_\_

The demographic data requested below is important in profiling the respondents of the survey. This section is to gather the information about your background for statistical purposes only, so that your answers may be compared to others like yourself. *This information will be kept strictly confidential.* Please answer the following questions by placing a check in the appropriate blank(s).

### Company Information:

1. What is the primary business purpose (mission) of your firm?

- \_\_\_\_\_ Finance (Banking, Insurance, Securities, Credit, Real Estate)  
 \_\_\_\_\_ Government (Military, Federal, State, Municipal)  
 \_\_\_\_\_ Service (Business, Education, Medical, Legal)  
 \_\_\_\_\_ Manufacturing  
 \_\_\_\_\_ Other \_\_\_\_\_ (Please Specify)

2. In what geographic area of the country are you currently working?

- \_\_\_\_\_ Eastern (CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT)  
 \_\_\_\_\_ Southern (AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV)  
 \_\_\_\_\_ North Central (IA, IL, IN, MI, MN, MO, OH, WI)  
 \_\_\_\_\_ Mountain Plains (CO, KS, ND, NE, NM, OK, SD, TX, WY)  
 \_\_\_\_\_ Western (AK, AZ, CA, HI, ID, MT, NV, OR, UT, WA)  
 \_\_\_\_\_ Other \_\_\_\_\_ (Please Specify)

3. Annual MIS/DP budget (including Telecommunications):

- \_\_\_\_\_ Under \$100,000  
 \_\_\_\_\_ \$100,001 - \$250,000  
 \_\_\_\_\_ \$250,001 - \$500,000  
 \_\_\_\_\_ \$500,001 - \$1,000,000  
 \_\_\_\_\_ \$1,000,001 - \$5,000,000  
 \_\_\_\_\_ Greater than \$5,000,000

4. Number of employees in the MIS/DP department? (Check One)

- \_\_\_\_\_ 1 - 10  
 \_\_\_\_\_ 11 - 50  
 \_\_\_\_\_ 51 - 100  
 \_\_\_\_\_ 101 - 500  
 \_\_\_\_\_ 501 - 1,000  
 \_\_\_\_\_ Over 1,000

### Personal Information:

1. What is the highest level of education that you have achieved? (Check One)

- \_\_\_\_\_ Completed Doctoral Degree  
 \_\_\_\_\_ Completed Masters Degree  
 \_\_\_\_\_ Completed 4-year College  
 \_\_\_\_\_ Completed High School  
 \_\_\_\_\_ Other \_\_\_\_\_ (Please Specify)

2. What description best describes the major of the highest college degree completed?  
(Check One)

- Management Information Systems  
 Business/Accounting  
 Computer Science  
 Engineering  
 Education  
 Liberal Arts  
 Other \_\_\_\_\_ (Please Specify)

3. Which of the following categories best describes your annual salary in your current position?  
(Check One)

- Under \$20,000  
 \$20,000 to \$29,999  
 \$30,000 to \$39,999  
 \$40,000 to \$49,999  
 \$50,000 to \$59,999  
 \$60,000 to \$69,999  
 \$70,000 to \$79,999  
 \$80,000 to \$89,999  
 Over \$90,000

### **Request for Survey Results:**

If you would like a copy of the survey results, write to the address listed below.

Pamela J. Jackson, Assistant Professor  
Department of Business Education and Office Administration  
219 Applied Sciences Building  
East Central University  
Ada, OK 74820



# MANAGEMENT INFORMATION ISSUES

**Instructions:** Please rate the following MIS issues based on your perceptions of their importance in the field of MIS both today and five years from today. Circle the appropriate number for each item using the following scale:

Not Important	Of Little Importance	Somewhat Important	Important	Very Important
1	2	3	4	5
		<i>Today</i>	<i>In 5 years</i>	
<hr/>				
1. Management Information System (MIS) Strategic Planning			1 2 3 4 5	1 2 3 4 5
<hr/>				
2. Executive Information System (EIS) Strategic Planning			1 2 3 4 5	1 2 3 4 5
<hr/>				
3. Understanding the Role and Contribution of MIS to General Management			1 2 3 4 5	1 2 3 4 5
<hr/>				
4. Understanding the Role and Contribution of EIS to General Management			1 2 3 4 5	1 2 3 4 5
<hr/>				
5. Aiding and Facilitating Organizational Learning and Use of MIS			1 2 3 4 5	1 2 3 4 5
<hr/>				
6. Using Information Systems for Competitive Advantage			1 2 3 4 5	1 2 3 4 5
<hr/>				
7. Aligning the MIS Organization with that of the Parent Organization			1 2 3 4 5	1 2 3 4 5
<hr/>				
8. Promoting Effective Use of the Data Resource			1 2 3 4 5	1 2 3 4 5
<hr/>				
9. Developing an Information Architecture			1 2 3 4 5	1 2 3 4 5
<hr/>				
10. Facilitating and Managing End-User Computing			1 2 3 4 5	1 2 3 4 5
<hr/>				
11. Integrating Data Processing, Office-Automation, and Telecommunications			1 2 3 4 5	1 2 3 4 5
<hr/>				
12. Planning, Implementing and Managing Telecommunications			1 2 3 4 5	1 2 3 4 5
<hr/>				
13. Measuring MIS Effectiveness and Productivity			1 2 3 4 5	1 2 3 4 5
<hr/>				
14. Specifying, Recruiting, and Developing MIS Human Resources			1 2 3 4 5	1 2 3 4 5
<hr/>				
15. Improving the Effectiveness of Software Development			1 2 3 4 5	1 2 3 4 5
<hr/>				
16. Enabling Electronic Data Interchange and Multi-Vendor Integration			1 2 3 4 5	1 2 3 4 5
<hr/>				
17. Planning and Managing the Applications Portfolio			1 2 3 4 5	1 2 3 4 5
<hr/>				
18. Planning, Implementing, and Managing Factory Automation			1 2 3 4 5	1 2 3 4 5
<hr/>				
19. Determining Appropriate MIS Funding Levels			1 2 3 4 5	1 2 3 4 5
<hr/>				
20. Selecting and Integrating Packaged Applications Software			1 2 3 4 5	1 2 3 4 5
<hr/>				
21. Improving Information Security and Control			1 2 3 4 5	1 2 3 4 5
<hr/>				
22. Managing the Impact of Artificial Intelligence/Expert Systems			1 2 3 4 5	1 2 3 4 5
<hr/>				
23. MIS Ethics			1 2 3 4 5	1 2 3 4 5
<hr/>				
24. The Impact of Personal Computers in an Institutional Environment			1 2 3 4 5	1 2 3 4 5
<hr/>				
25. The Impact of Decision Support Systems			1 2 3 4 5	1 2 3 4 5

Go to next page

	<i>Today</i>	<i>In 5 years</i>
26. <u>The Impact of Hardware/New Technologies</u>	1 2 3 4 5	1 2 3 4 5
27. <u>Promoting Management of the Data Resource</u>	1 2 3 4 5	1 2 3 4 5
28. <u>Managing new Software Technologies (i.e. 4GL's, CASE)</u>	1 2 3 4 5	1 2 3 4 5
29. <u>Communicating with End-users</u>	1 2 3 4 5	1 2 3 4 5
30. <u>Managing the User Services Center</u>	1 2 3 4 5	1 2 3 4 5
31. <u>Communicating with Upper-Level Management</u>	1 2 3 4 5	1 2 3 4 5
32. <u>Other</u>	1 2 3 4 5	1 2 3 4 5

# MANAGEMENT INFORMATION SYSTEMS FACULTY SURVEY

Control Code \_\_\_\_\_

## Demographic Data

The demographic data requested below is important in profiling the respondents of the survey. This section is to gather the information about your background for statistical purposes only, so that your answers may be compared to others like yourself. *This information will be kept strictly confidential.* Please answer the following questions by placing a check in the appropriate blank (s).

1. In which of the following categories would you place your current faculty position: (Check one)

- \_\_\_\_\_ Professor
- \_\_\_\_\_ Associate Professor
- \_\_\_\_\_ Assistant Professor
- \_\_\_\_\_ Instructor
- \_\_\_\_\_ Other (Please Specify) \_\_\_\_\_

2. Please indicate the highest level of college/university degree completed. (Check One)

- \_\_\_\_\_ Doctoral Degree
- \_\_\_\_\_ Masters Degree
- \_\_\_\_\_ Bachelors Degree
- \_\_\_\_\_ Other (Please Specify) \_\_\_\_\_

3. What description best identifies the academic department for which you are a member. (Check one)

- \_\_\_\_\_ Management Information Systems
- \_\_\_\_\_ Business Administration
- \_\_\_\_\_ Accounting
- \_\_\_\_\_ Computer Science
- \_\_\_\_\_ Engineering
- \_\_\_\_\_ Education
- \_\_\_\_\_ Liberal Arts
- \_\_\_\_\_ Other (Please Specify) \_\_\_\_\_

4. Are you now or have you previously held a MIS or MIS related position in the private sector?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

If Yes, please indicate (check as many as apply) what your primary responsibilities are/were.

- \_\_\_\_\_ General MIS Management
- \_\_\_\_\_ Information Resource Management
- \_\_\_\_\_ Systems Development
- \_\_\_\_\_ Education/Training
- \_\_\_\_\_ Planning
- \_\_\_\_\_ Consulting
- \_\_\_\_\_ Data Base Management
- \_\_\_\_\_ Telecommunications
- \_\_\_\_\_ Accounting
- \_\_\_\_\_ Other (Please specify) \_\_\_\_\_

5. What courses are you currently teaching for this academic year? Check each area that applies.

- Management Information Systems  
 Systems Analysis and Design  
 Data Base Management  
 Microcomputer Applications  
 EDP Auditing  
 Programming  
 Telecommunications  
 Other (Please Specify) \_\_\_\_\_

### Demographic Data on College/University

The demographic data requested below which pertains to the institution for which you are affiliated is for profiling the institutions. This section is to gather the information for statistical purposes only, so that your answers may be compared to other institutions like yours. Again, this information will be kept strictly confidential. Please answer the following questions by placing a check in the appropriate blank(s):

1. Approximately what is the undergraduate enrollment in your college/university? (Check One)

- less than 1,000  
 1,000 - 1,999  
 2,000 - 3,999  
 4,000 - 5,999  
 greater than 6,000

2. Does your institution offer an undergraduate major in MIS/CIS/IS?

Yes  No

3. Does your institution offer a Masters degree in MIS/CIS/IS?

Yes  No

4. Does your institution offer a Ph.D., D.B.A., or Ed.D. degree in MIS/CIS/IS?

Yes  No

If yes, please check those which apply.

- Ph.D.  
 D.B.A.  
 Ed.D.

### Request for Survey Results:

If you would like a copy of the survey results, write to the address listed below.

Pamela J. Jackson, Assistant Professor  
 Department of Business Education and Office Administration  
 219 Applied Sciences Building  
 East Central University  
 Ada, OK 74820

# MANAGEMENT INFORMATION ISSUES

**Instructions:** Please rate the following MIS issues based on your perceptions of their importance in the field of MIS both today and five years from today. Circle the appropriate number for each item using the following scale:

	Not Important	Of Little Importance	Somewhat Important	Important	Very Important
	1	2	3	4	5
	<i>Today</i>				<i>In 5 years</i>
1. Management Information System (MIS) Strategic Planning	1	2	3	4	5
2. Executive Information System (EIS) Strategic Planning	1	2	3	4	5
3. Understanding the Role and Contribution of MIS to General Management	1	2	3	4	5
4. Understanding the Role and Contribution of EIS to General Management	1	2	3	4	5
5. Aiding and Facilitating Organizational Learning and Use of MIS	1	2	3	4	5
6. Using Information Systems for Competitive Advantage	1	2	3	4	5
7. Aligning the MIS Organization with that of the Parent Organization	1	2	3	4	5
8. Promoting Effective Use of the Data Resource	1	2	3	4	5
9. Developing an Information Architecture	1	2	3	4	5
10. Facilitating and Managing End-User Computing	1	2	3	4	5
11. Integrating Data Processing, Office-Automation, and Telecommunications	1	2	3	4	5
12. Planning, Implementing and Managing Telecommunications	1	2	3	4	5
13. Measuring MIS Effectiveness and Productivity	1	2	3	4	5
14. Specifying, Recruiting, and Developing MIS Human Resources	1	2	3	4	5
15. Improving the Effectiveness of Software Development	1	2	3	4	5
16. Enabling Electronic Data Interchange and Multi-Vendor Integration	1	2	3	4	5
17. Planning and Managing the Applications Portfolio	1	2	3	4	5
18. Planning, Implementing, and Managing Factory Automation	1	2	3	4	5
19. Determining Appropriate MIS Funding Levels	1	2	3	4	5
20. Selecting and Integrating Packaged Applications Software	1	2	3	4	5
21. Improving Information Security and Control	1	2	3	4	5
22. Managing the Impact of Artificial Intelligence/Expert Systems	1	2	3	4	5
23. MIS Ethics	1	2	3	4	5
24. The Impact of Personal Computers in an Institutional Environment	1	2	3	4	5
25. The Impact of Decision Support Systems	1	2	3	4	5

Go to next page

	<u>Today</u>	<u>In 5 years</u>
<u>26. The Impact of Hardware/New Technologies</u>	1 2 3 4 5	1 2 3 4 5
<u>27. Promoting Management of the Data Resource</u>	1 2 3 4 5	1 2 3 4 5
<u>28. Managing new Software Technologies (i.e. 4GL's, CASE)</u>	1 2 3 4 5	1 2 3 4 5
<u>29. Communicating with End-users</u>	1 2 3 4 5	1 2 3 4 5
<u>30. Managing the User Services Center</u>	1 2 3 4 5	1 2 3 4 5
<u>31. Communicating with Upper-Level Management</u>	1 2 3 4 5	1 2 3 4 5
<u>32. Other</u>	1 2 3 4 5	1 2 3 4 5

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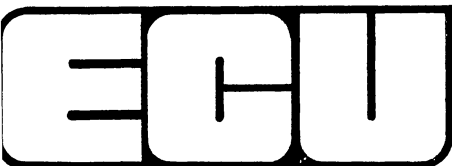
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APPENDIX C

COVER LETTERS



EAST CENTRAL UNIVERSITY

ADA, OKLAHOMA 74820

Department of Business Education  
and Office Management

April 10, 1990

Dear MIS Manager:

As a manager in the field of Management Information Systems (MIS), you are faced with ever changing issues. Many of these issues can be labeled as critical to the success of your department and organization. While industrial and academic efforts are increasing to provide support in helping you deal with this ever present change, it is vital that research continue to seek answers about the changing needs of the MIS manager.

I am conducting a survey of randomly selected MIS managers that explores the importance of those issues considered to be important and/or critical to the success of the MIS area today. In addition, I am seeking your perceptions as to those areas you perceive to be critical to the success of the MIS area five years from now.

Would you help in this effort by answering the survey questions? The results of the study will be reported in group form only, and individual responses will in no way be identified with specific companies or managers.

Please take a few minutes to contribute to this study by completing the survey and returning it in the enclosed postage paid envelope.

Please respond by March 20, 1990. Your cooperation will be greatly appreciated.

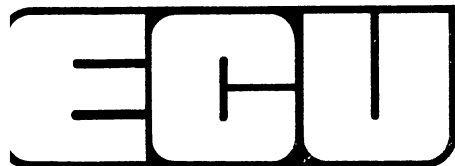
Sincerely,

Pamela J. Jackson  
Assistant Professor

ch

Enclosures





Department of Business Education  
and Office Management

April 10, 1990

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Please respond by March 20, 1990. Your cooperation will be greatly appreciated.

Sincerely,

Pamela J. Jackson  
Assistant Professor

ch

Enclosures

Recently, you received this letter from me asking for your perceptions regarding the critical issues of MIS today and five years from now. As of today, I have not received a completed questionnaire from you.

Your response will provide data that may be helpful in improving the interaction between collegiate and corporate MIS endeavors. In order for the results of the study to be truly representative of MIS managers and MIS faculty, your response is NEEDED.

Please join those others who have already responded by returning this questionnaire today; you may be assured of complete confidentiality. The questionnaire identification number is only for mailing purposes.

Thank you for participating in this MIS research.

Pamela Jackson



EAST CENTRAL UNIVERSITY

ADA, OKLAHOMA 74820

Department of Business Education  
and Office Management

March 6, 1990

Dear MIS Colleague:

Education in the field of MIS poses a unique challenge. As information systems and computing are evolving at an ever faster rate, those MIS issues considered critical to a complete MIS educational base for our students are also evolving. Therefore, it is vital that research continue to seek answers about the changing needs of the MIS student.

I am conducting a survey of randomly selected MIS faculty that explores the importance of those issues considered to be important and/or critical in the field of MIS today. In addition, I am seeking your perceptions as to those areas you perceive to be critical to the success of the MIS area five years from now.

Would you help in this effort by answering the enclosed survey questions? The results of the study will be reported in group form only, and individual responses will in no way be identified with specific faculty members or colleges/universities.

Please take a few minutes to contribute to this study by completing the survey and returning it in the enclosed postage paid envelope.

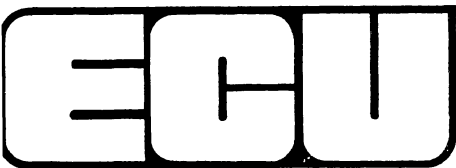
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Pamela J. Jackson  
Assistant Professor

ch

Enclosures



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March 6, 1990

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Your response will provide data that may be helpful in improving the interaction between collegiate and corporate MIS endeavors. In order for the results of the study to be truly representative of MIS managers and MIS faculty, your response is NEEDED.

Please join those others who have already responded by returning this questionnaire today; you may be assured of complete confidentiality. The questionnaire identification number is only for mailing purposes.

Thank you for participating in this MIS research.

Pamela Jackson

APPENDIX D

STATISTICS OF COLLECTED DATA NOT DIRECTLY  
RELATED TO THE PURPOSE  
OF THE STUDY

TABLE IX  
 PRIMARY BUSINESS PURPOSE AS SPECIFIED BY  
 MIS MANAGER RESPONDENTS  
 (n=94)

Business Purpose	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Finance	13	13.8	13	13.8
Government	8	8.5	21	22.3
Manufacturing	27	28.7	48	51.1
Other	27	28.7	75	79.8
Service	9	20.2	94	100.0

TABLE X  
 PRIMARY PURPOSE OF BUSINESS SPECIFIED BY  
 MIS MANAGER RESPONDENTS AS "OTHER"

Primary Purpose of Business	Frequency
Agriculture	1
Commercial Photography	1
Consturction	1
Hotel/Casino	1
Mining	2
Payroll Processing	1
Petroleum	2
Public Utility	4
Publishing	1
Retail Sales	3
Transportation	3
Wholesale Distribution	<u>1</u>
Total	26

TABLE XI

GEOGRAPHIC REGION IN WHICH MIS MANAGER RESPONDENTS  
INDICATED THEY WERE CURRENTLY WORKING  
(n=94)

Region	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Eastern	25	26.6	25	26.6
Mountain Plains	7	7.4	32	34.0
North Central	31	33.0	63	67.0
Southern	14	14.9	77	81.9
Western	11	11.7	88	93.6
Other*	6	6.4	94	100.0

\*Those respondents indicating "other" in this category stated they worked either across boundaries or internationally.

TABLE XII

ANNUAL COMPANY MIS/DP BUDGET INCLUDING TELECOMMUNICATIONS  
INDICATED BY MIS MANAGER RESPONDENTS  
(n=94)

Budget	Frequency	Percent	Cumulative Frequency	Cumulative Percent
< \$100,000	1	1.06	1	1.06
\$100,000-\$250,000	7	7.45	8	8.51
\$250,000-\$500,000	13	3.83	21	22.34
\$500,000-\$1,000,000	11	11.70	32	34.04
\$1,000,001-\$5,000,000	37	39.36	69	73.40
> than \$5,000,000	25	26.60	94	100.00

TABLE XIII

NUMBER OF EMPLOYEES (BY CATEGORY) CURRENTLY EMPLOYED  
 IN COMPANY MIS/DP DEPARTMENT AS INDICATED  
 BY MIS MANAGER RESPONDENTS  
 (n=94)

Number of Employees	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1-10	23	24.47	23	24.47
11-50	35	37.23	58	61.70
51-100	19	20.21	77	81.91
101-500	14	14.89	91	96.80
501-1,000	2	2.14	93	98.94
Over 1,000	1	1.06	94	100.00



TABLE XIV

LEVEL OF EDUCATION COMPLETED AS REPORTED BY  
MIS MANAGER RESPONDENTS  
(n=94)

Level of Education	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Doctorate	2	2.1	2	2.1
Masters	29	30.9	31	33.0
Bachelors	42	44.7	73	77.7
High School	8	8.4	81	86.1
Other*	13	13.9	94	100.0

\*Those respondents indicating "other" stated they had earned a two-year technical degree or achieved some level of vocational training for non-credit.

TABLE XV  
 COLLEGIATE DEGREE MAJOR OF HIGHEST  
 EARNED DEGREE AS SPECIFIED BY MIS MANAGER RESPONDENTS  
 (n=94)

Degree	Frequency	Percent	Cumulative Frequency	Cumulative Percent
MIS (Management Information Sys.)	6	6.4	6	6.4
Business/Accounting	40	42.6	46	49.0
Computer Science	12	12.8	58	61.8
Education	3	3.2	61	65.0
Engineering	3	3.2	74	68.2
Liberal Arts	7	7.4	71	75.6
Other (as indicated by some of the MIS Managers which indicated "other")				
Industrial Relations	1	1.1	72	76.6
Mathematics	2	2.1	74	78.8
Physics	1	1.1	75	79.9
Geology	1	1.1	76	81.0
Healthcare Management	1	1.1	77	82.1
Psychology	2	2.1	79	84.2
Not Specified	15	15.9	94	100.0

TABLE XVI  
 ANNUAL SALARY (BY CATEGORY) REPORTED BY  
 MIS MANAGER RESPONDENTS  
 (n=92\*)

Salary Categories	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Under \$20,000	0	-	0	-
\$20,000-\$29,999	0	-	0	-
\$30,000-\$39,999	8	8.69	8	8.69
\$40,000-\$49,999	13	14.13	21	22.82
\$50,000-\$59,999	19	20.65	40	43.47
\$60,000-\$69,999	12	13.04	52	56.51
\$70,000-\$79,999	9	9.78	61	66.29
\$80,000-\$89,999	13	14.13	74	80.42
Over \$90,000	18	19.58	92	100.00

\*Two respondents failed to answer this item of the questionnaire.

TABLE XVII  
 CURRENT FACULTY POSITION HELD AS SPECIFIED BY  
 MIS FACULTY RESPONDENTS  
 (n=155)

Faculty Position	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Professor	52	33.54	52	33.54
Associate Professor	49	31.61	101	65.15
Assistant Professor	47	30.32	148	95.47
Instructor	4	2.60	152	98.07
Other	3	1.93	155	100.00

\*Respondents indicating "other" in all cases stated they currently held MIS research positions.

TABLE XVIII  
HIGHEST EARNED ACADEMIC DEGREE SPECIFIED  
BY MIS FACULTY RESPONDENTS  
(n=155)

Degree	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Doctorate	135	87.1	135	87.1
Masters	19	12.3	154	99.4
Bachelors	1	0.6	155	100.0

TABLE XIX

CURRENT ACADEMIC DEPARTMENT AFFILIATION  
AS SPECIFIED BY MIS FACULTY RESPONDENTS  
(n=155)

Department	Frequency	Percent	Cumulative Frequency	Cumulative Percent
MIS	85	55	85	55
Accounting	17	11	102	66
Business/ Administration	20	12	122	78
Computer Sci.	3	2	125	80
Liberal Arts	1	1	126	81
Other	29	19	155	100

TABLE XX

ACADEMIC DEPARTMENT AFFILIATION AS SPECIFIED  
BY MIS FACULTY RESPONDENTS WHO SELECTED  
"OTHER" AS THE CHOSEN CATEGORY  
(n=29)

Department	Frequency	Percent
Not Specified	24	83
Management	3	10
Business/Office Systems	<u>2</u>	<u>7</u>
Total	29	100

TABLE XXI

MIS FACULTY RESPONDENTS INDICATING IF PREVIOUSLY  
HELD MIS OR MIS RELATED PRIVATE SECTOR POSITIONS  
(n=155)

Held Position	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	53	34.2	53	34.2
Yes	102	65.8	155	100.0

TABLE XXII

ALL SPECIFIC JOB TITLES AS SPECIFIED BY MIS FACULTY  
WHICH INDICATED "YES" TO HAVING PREVIOUSLY  
HELD MIS OR MIS RELATED POSITIONS  
(n=102)

Job Title	Frequency	Percent
General MIS Management	28	27.5
Information Resource Management	13	12.7
Systems Development	66	64.7
Education/Training	35	34.3
MIS Planning	21	20.6
MIS Consulting	56	54.9
Data Base Management	23	22.5
Telecommunications	7	6.9
Accounting	3	2.9
Other		
Auditing	1	1.0
Operations Research	1	1.0
Research Scientist/Software Engineer	1	1.0
Standards, QA, Disaster Recovery Planning and Coordination	1	1.0
User Support	1	1.0
Not Specified	<u>11</u>	0.78
Total	268	

TABLE XXIII

ALL COURSES SPECIFIED AS CURRENTLY TAUGHT AS  
SPECIFIED BY MIS FACULTY RESPONDENTS  
(n=155)

Specific Course by Area	Frequency	Percent
Management Information Systems	78	50.32
Systems Analysis and Design	52	33.54
Data Base Management	35	22.58
Microcomputer Applications	47	30.32
EDP Auditing	4	2.58
Programming	28	18.06
Telecommunications	12	7.74
Other		
Accounting Information Systems	2	1.30
Artificial Intelligence	2	1.30
Corporate IS Management	1	0.60
Desktop Publishing	1	0.60
Doctorate Seminar in IS/MIS	4	2.58
End-User Computing	2	1.30
Decision Support Systems/ Expert Systems	7	4.51
Graduate MIS/Masters level	1	0.60
Human Elements in MIS Design	1	0.60
Improving Systems Maintenance	1	0.60
Information Resource Management	3	1.90
Office Information Systems	1	0.60
Organizational Communications	1	0.60
Organizational Policy & Strategy	1	0.60
Production Operations Management	2	1.30
Project Design	1	0.60
Project Management	1	0.60
Quantitative Decision Making	1	0.60
Software Engineering	1	0.60
Systems Maintenance	1	0.60
Technology Management	1	0.60
Transportation Information Systems	1	0.60
Word Processing	1	0.60
Not Specified	<u>29</u>	
Total	322	

\*Course titles which were similar were grouped under one course title.



TABLE XXIV

APPROXIMATE UNDERGRADUATE ENROLLMENT AS SPECIFIED BY  
 MIS FACULTY FOR THEIR PRESENT COLLEGE/UNIVERSITY APPOINTMENT  
 (n=155)

Enrollment	Frequency	Percent	Cumulative Frequency	Cumulative Percent
< 1,000	4	2.58	4	2.58
1,000-1,999	8	5.16	12	7.74
2,000-3,999	22	14.19	34	21.93
4,000-5,999	18	11.62	52	33.55
> than 6,000	103	66.45	155	100.00

TABLE XXV

INSTITUTIONS OFFERING DEGREES IN MIS/CIS/IS  
AS SPECIFIED BY MIS FACULTY RESPONDENTS  
(n=155)

Degree	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<b>Bachelors</b>				
Yes	128	82.58	128	82.58
No	27	17.42	155	100.00
<b>Masters</b>				
Yes	66	42.58	66	42.58
No	89	57.42	155	100.00
<b>Doctorate</b>				
Yes	45	29.03	29	29.03
No	110	70.97	155	100.00

TABLE XXVI

TYPE OF DOCTORATE CONFERRED AT INSITUTIONS INDICATED  
OFFERING DOCTORATES AS SPECIFIED BY MIS FACULTY  
(n=45)

Degree	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Ph.D.	39	87.67	39	87.76
D.B.A.	4	8.89	43	95.56
Ed.D.	2	4.44	45	100.00

TABLE XXVII  
 RESPONDENT REQUESTS FOR SURVEY RESULTS  
 (n=249)

Survey Results	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	217	87.15	217	87.15
Yes	32	12.85	249	100.00

TABLE XXVIII  
 CRITICAL ISSUES IDENTIFIED IN SURVEY INSTRUMENT,  
 ITEM NUMBER 32, AS "OTHER" BY RESPONDENTS

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Issue Description

---

MIS Managers

1. Industry standards and non-disruptive change for hardware and software
2. Integration of all governmental units; local, state and federal governments need more integration of hardware and software

MIS Faculty

1. Educating upper management
  2. Data administration
  3. Use of technology as a problem solving tool and not an end in itself
-

APPENDIX E  
RESPONSES TO MIS CRITICAL  
ISSUE QUESTIONNAIRE

TABLE XXIX

RESPONSES TO MIS CRITICAL ISSUES QUESTIONNAIRE  
TODAY  
(MIS Faculty n=155; MIS Managers n=94)

		Frequencies							
		1	2	3	4	5			
F=Faculty							3=Somewhat important		
M=Managers							4=Important		
1=Not important							5=Very important		
2=Of little importance									
<hr/>									
Issue 1: Management Information System (MIS) Strategic Planning									
		Frequencies							
		1	2	3	4	5			
<hr/>									
Total									
F		0	5	26	59	65		155	
M		0	1	9	48	36		94	
Total		0	6	35	107	101		249	
<hr/>									
Issue 2: Executive Information System (EIS) Strategic Planning									
		Frequencies							
		1	2	3	4	5			
<hr/>									
Total									
F		6	26	52	44	27		155	
M		2	11	37	25	19		94	
Total		8	37	89	69	46		249	
<hr/>									
Issue 3: Understanding the Role and Contribution of MIS to General Management									
		Frequencies					Total		
		1	2	3	4	5			
<hr/>									
F		1	11	39	50	54		155	
M		0	2	18	34	40		94	
Total		1	13	57	84	94		249	
<hr/>									

Issue 4: Understanding the Role and Contribution of EIS to General Management

	Frequencies					Total
	1	2	3	4	5	
F	11	28	54	42	20	155
M	1	15	28	30	20	94
Total	12	43	82	72	40	249

Issue 5: Aiding and Facilitating Organizational Learning and Use of MIS

	Frequencies					Total
	1	2	3	4	5	
F	2	14	43	62	34	155
M	0	2	26	49	17	94
Total	2	16	69	111	51	249

Issue 6: Using Information Systems for Competitive Advantage

	Frequencies					Total
	1	2	3	4	5	
F	2	9	33	58	53	155
M	0	5	12	43	34	94
Total	2	14	45	101	87	249

Issue 7: Aligning the MIS Organization with that of the Parent Organization

	Frequencies					Total
	1	2	3	4	5	
F	5	19	57	44	30	155
M	3	8	23	33	27	94
Total	8	27	80	77	57	249

## Issue 8: Promoting Effective Use of the Data Resource

	Frequencies					
	1	2	3	4	5	Total
F	0	9	50	52	44	155
M	0	2	24	36	32	94
Total	0	11	74	88	76	249

## Issue 9: Developing an Information Architecture

	Frequencies					
	1	2	3	4	5	Total
F	1	20	65	39	30	155
M	1	7	28	34	24	94
Total	2	27	93	73	54	249

## Issue 10: Facilitating and Managing End-User Computing

	Frequencies					
	1	2	3	4	5	Total
F	0	11	34	72	38	155
M	0	10	24	41	19	94
Total	0	21	58	113	57	249

## Issue 11: Integrating Data Processing, Office-Automation, and Telecommunications

	Frequencies					
	1	2	3	4	5	Total
F	0	18	58	49	30	155
M	0	9	34	25	26	94
Total	0	27	92	74	56	249

Issue 12: Planning, Implementing and Managing  
Telecommunications

	Frequencies					Total
	1	2	3	4	5	
F	2	9	52	54	38	155
M	2	3	28	38	23	94
Total	4	12	80	92	61	249

Issue 13: Measuring MIS Effectiveness and Productivity

	Frequencies					Total
	1	2	3	4	5	
F	4	20	56	44	31	155
M	2	9	39	32	12	94
Total	6	29	95	76	43	249

Issue 14: Specifying, Recruiting, and Developing MIS Human  
Resources

	Frequencies					Total
	1	2	3	4	5	
F	4	19	58	53	21	155
M	1	4	23	42	24	94
Total	5	23	81	95	45	249

Issue 15: Improving the Effectiveness of Software  
Development

	Frequencies					Total
	1	2	3	4	5	
F	1	8	46	60	40	155
M	0	6	19	46	23	94
Total	1	14	65	106	63	249



Issue 16: Enabling Electronic Data Interchange and Multi-Vendor Integration

	Frequencies					Total
	1	2	3	4	5	
F	5	19	53	53	25	155
M	2	11	34	32	15	94
Total	7	30	87	85	40	249

Issue 17: Planning and Managing the Applications Portfolio

	Frequencies					Total
	1	2	3	4	5	
F	4	16	63	51	21	155
M	0	10	28	46	10	94
Total	4	26	91	97	31	249

Issue 18: Planning, Implementing, and Managing Factory Automation

	Frequencies					Total
	1	2	3	4	5	
F	6	13	66	50	20	155
M	16	14	31	28	5	94
Total	22	27	97	78	25	249

Issue 19: Determining Appropriate MIS Funding Levels

	Frequencies					Total
	1	2	3	4	5	
F	7	24	56	45	23	155
M	3	4	34	30	23	94
Total	10	28	90	75	46	249

Issue 20: Selecting and Integrating Packaged Application Software

	Frequencies					Total
	1	2	3	4	5	
F	3	17	67	57	11	155
M	1	9	37	32	15	94
Total	4	26	104	89	26	249

Issue 21: Improving Information Security and Control

	Frequencies					Total
	1	2	3	4	5	
F	2	11	51	51	40	155
M	1	6	35	24	28	94
Total	3	17	86	75	68	249

Issue 22: Managing the Impact of Artificial Intelligence/Expert Systems

	Frequencies					Total
	1	2	3	4	5	
F	4	24	61	52	14	155
M	7	31	36	17	3	94
Total	11	55	97	69	17	249

Issue 23: MIS Ethics

	Frequencies					Total
	1	2	3	4	5	
F	7	24	54	32	38	155
M	2	10	25	27	30	94
Total	9	34	79	59	68	249

Issue 24: The Impact of Personal Computers in an Institutional Environment

	Frequencies					Total
	1	2	3	4	5	
F	1	14	57	54	29	155
M	2	9	30	37	16	94
Total	3	23	87	91	45	249

Issue 25: The Impact of Decision Support Systems

	Frequencies					Total
	1	2	3	4	5	
F	1	17	61	60	16	155
M	3	11	37	36	7	94
Total	4	28	98	96	23	249

Issue 26: The Impact of Hardware/New Technologies

	Frequencies					Total
	1	2	3	4	5	
F	1	10	60	57	27	155
M	1	2	27	44	20	94
Total	2	12	87	101	47	249

Issue 27: Promoting Management of the Data Resource

	Frequencies					Total
	1	2	3	4	5	
F	2	12	63	55	23	155
M	0	4	26	46	18	94
Total	2	16	89	101	41	249

Issue 28: Managing new Software Technologies (i.e. 4GL's, CASE)

	Frequencies					Total
	1	2	3	4	5	
F	1	8	63	66	17	155
M	3	10	34	35	12	94
Total	4	18	97	101	29	249

Issue 29: Communicating with End-users

	Frequencies					Total
	1	2	3	4	5	
F	1	6	40	53	55	155
M	0	1	7	28	58	94
Total	1	7	47	81	113	249

Issue 30: Managing the User Services Center

	Frequencies					Total
	1	2	3	4	5	
F	1	16	61	58	19	155
M	1	10	32	32	19	94
Total	2	26	93	90	38	249

Issue 31: Communicating with Upper-Level Management

	Frequencies					Total
	1	2	3	4	5	
F	1 2	8	44	49	51	155
M	0	1	7	25	61	94
Total	2	9	51	74	112	249

TABLE XXX  
 RESPONSES TO MIS CRITICAL ISSUES QUESTIONNAIRE  
 FIVE YEARS FROM TODAY  
 (MIS Faculty n=155; MIS Managers n=94)

		Frequencies					
		1	2	3	4	5	Total
F=Faculty Respondents							3=Somewhat important
M=Manager Respondents							4=Important
1=Not important							5=Very important
2=Of little importance							
<hr/>							
Issue 1: Management Information Systems (MIS) Strategic Planning							
		Frequencies					
		1	2	3	4	5	Total
F		1	1	12	47	94	155
M		0	1	6	32	55	94
Total		1	2	18	79	149	249
<hr/>							
Issue 2: Executive Information System (EIS) Strategic Planning							
		Frequencies					
		1	2	3	4	5	Total
F		4	9	38	51	53	155
M		1	2	14	39	38	94
Total		5	11	52	90	91	249
<hr/>							
Issue 3: Understanding the Role and Contribution of MIS to General Management							
		Frequencies					
		1	2	3	4	5	Total
F		0	10	27	48	70	155
M		0	3	12	27	52	94
Total		0	13	39	75	122	249
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Issue 4: Understanding the Role and Contribution of EIS to General Management

	Frequencies					Total
	1	2	3	4	5	
F	6	15	47	54	33	155
M	0	4	25	36	29	94
Total	6	19	72	90	62	249

Issue 5: Aiding and Facilitating Organizational Learning and Use of MIS

	Frequencies					Total
	1	2	3	4	5	
F	1	14	45	50	45	155
M	0	0	20	49	25	94
Total	1	14	65	99	70	249

Issue 6: Using Information Systems for Competitive Advantage

	Frequencies					Total
	1	2	3	4	5	
F	2	7	20	29	97	155
M	0	1	6	28	59	94
Total	2	8	26	57	156	249

Issue 7: Aligning the MIS Organization with that of the Parent Organization

	Frequencies					Total
	1	2	3	4	5	
F	3	17	51	40	44	155
M	3	10	19	27	35	94
Total	6	27	70	67	79	249

## Issue 8: Promoting Effective Use of the Data Resource

	Frequencies					Total
	1	2	3	4	5	
F	0	5	38	48	64	155
M	0	1	19	29	45	94
Total	0	6	57	77	109	249

## Issue 9: Developing an Information Architecture

	Frequencies					Total
	1	2	3	4	5	
F	1	9	47	54	44	155
M	1	2	18	38	35	94
Total	2	11	65	92	79	249

## Issue 10: Facilitating and Managing End-User Computing

	Frequencies					Total
	1	2	3	4	5	
F	4	11	32	51	57	155
M	0	4	21	39	30	94
Total	4	15	53	90	87	249

## Issue 11: Integrating Data Processing, Office-Automation, and Telecommunications

	Frequencies					Total
	1	2	3	4	5	
F	4	13	32	52	54	155
M	0	3	22	24	45	94
Total	4	16	54	76	99	249

Issue 12: Planning, Implementing and Managing Telecommunications

	Frequencies					Total
	1	2	3	4	5	
F	1	6	30	48	70	155
M	1	2	14	33	44	94
<b>Total</b>	<b>2</b>	<b>8</b>	<b>44</b>	<b>81</b>	<b>114</b>	<b>249</b>

Issue 13: Measuring MIS Effectiveness and Productivity

	Frequencies					Total
	1	2	3	4	5	
F	4	14	39	61	37	155
M	1	5	27	37	24	94
<b>Total</b>	<b>5</b>	<b>19</b>	<b>66</b>	<b>98</b>	<b>61</b>	<b>249</b>

Issue 14: Specifying, Recruiting, and Developing MIS Human Resources

	Frequencies					Total
	1	2	3	4	5	
F	3	12	50	57	33	155
M	0	3	13	42	36	94
<b>Total</b>	<b>3</b>	<b>15</b>	<b>63</b>	<b>99</b>	<b>69</b>	<b>249</b>

Issue 15: Improving the Effectiveness of Software Development

	Frequencies					Total
	1	2	3	4	5	
F	1	10	36	50	58	155
M	0	4	18	37	35	94
<b>Total</b>	<b>1</b>	<b>14</b>	<b>54</b>	<b>87</b>	<b>93</b>	<b>249</b>



Issue 16: Enabling Electronic Data Interchange and Multi-Vendor Integration

	Frequencies					Total
	1	2	3	4	5	
F	4	10	26	56	59	155
M	0	4	22	33	35	94
Total	4	14	48	89	94	249

Issue 17: Planning and Managing the Applications Portofolio

	Frequencies					Total
	1	2	3	4	5	
F	1	19	52	58	25	155
M	0	6	27	43	18	94
Total	1	25	79	101	43	249

Issue 18: Planning, Implementing and Managing Factory Automation

	Frequencies					Total
	1	2	3	4	5	
F	3	9	52	46	45	155
M	15	7	28	23	21	94
Total	18	16	80	69	66	249

Issue 19: Determining Appropriate MIS Funding Levels

	Frequencies					Total
	1	2	3	4	5	
F	6	23	50	49	27	155
M	2	4	22	33	33	94
Total	8	27	72	82	60	249

Issue 20: Selecting and Integrating Packaged Applications Software

	Frequencies					Total
	1	2	3	4	5	
F	4	19	60	41	31	155
M	1	5	29	29	30	94
Total	5	24	89	70	61	249

Issue 21: Improving Information Security and Control

	Frequencies					Total
	1	2	3	4	5	
F	1	7	28	48	71	155
M	0	5	27	25	37	94
Total	1	12	55	73	108	249

Issue 22: Managing the Impact of Artificial Intelligence/Expert Systems

	Frequencies					Total
	1	2	3	4	5	
F	0	10	28	62	55	155
M	3	7	37	32	15	94
Total	3	17	65	94	70	249

Issue 23: MIS Ethics

	Frequencies					Total
	1	2	3	4	5	
F	3	11	42	43	56	155
M	0	11	17	28	38	94
Total	3	22	59	71	97	249

Issue 24: The Impact of Personal Computers in an Institutional Environment

	Frequencies					Total
	1	2	3	4	5	
F	6	24	48	31	46	155
M	2	8	22	26	36	94
Total	8	32	70	57	82	249

Issue 25: The Impact of Decision Support Systems

	Frequencies					Total
	1	2	3	4	5	
F	3	16	43	49	44	155
M	1	5	24	37	27	94
Total	4	21	67	86	71	249

Issue 26: The Impact of Hardware/New Technologies

	Frequencies					Total
	1	2	3	4	5	
F	3	8	54	50	40	155
M	0	3	11	38	42	94
Total	3	11	65	88	82	249

Issue 27: Promoting Management of the Data Resource

	Frequencies					Total
	1	2	3	4	5	
F	2	10	51	55	37	155
M	0	2	15	49	28	94
Total	2	12	66	104	65	249

Issue 28: Managing new Software Technologies (i.e. 4GL's, CASE)

	Frequencies					Total
	1	2	3	4	5	
F	0	5	42	58	50	155
M	1	5	12	45	31	94
Total	1	10	54	103	81	249

Issue 29: Communicating with End-users

	Frequencies					Total
	1	2	3	4	5	
F	1	8	30	47	69	155
M	0	1	8	17	68	94
Total	1	9	38	64	137	249

Issue 30: Managing the User Services Center

	Frequencies					Total
	1	2	3	4	5	
F	9	21	48	48	29	155
M	1	6	25	32	30	94
Total	10	27	73	80	59	249

Issue 31: Communicating with Upper-Level Management

	Frequencies					Total
	1	2	3	4	5	
F	2	4	34	46	68	155
M	0	1	3	19	71	94
Total	2	5	37	65	139	249

APPENDIX F  
COVER LETTERS AND SURVEY INSTRUMENTS  
USED IN PILOT STUDY



Department of Business Education  
and Office Management

November 29, 1989

Dear MIS Manager

As the field of Management Information Systems (MIS) is evolving at such a rapid rate, it is vital for educators and industry to stay on top of the changing issues in the field that are considered to be critical. Therefore, it is important that research continue to seek answers about the changing needs of the MIS manager in order to better educate future MIS managers. Your assistance is needed.

I am conducting a survey of randomly selected MIS managers that explores the importance of those issues considered to be important and/or critical in the field of MIS today. In addition, I am seeking your perceptions as to those areas you perceive to be critical to the success of the MIS area five years from now.

Would you help in this effort by participating in the initial pilot study? Please take a few minutes to contribute to this study by completing the survey and providing any suggestions or criticisms of the attached instrument. The results of your evaluation will be used only to evaluate the effectiveness of the instrument and will in no way be identified with specific managers or organizations.

Please respond by December 15, 1989. Your cooperation will be greatly appreciated.

Sincerely

Pamela J. Jackson  
Assistant Professor

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Attachment



EAST CENTRAL UNIVERSITY

ADA, OKLAHOMA 74820

Department of Business Education  
and Office Management

November 19, 1989

Dear Colleague

Education in the field of Management Information Systems (MIS) poses a unique challenge. As information systems and computing are evolving at an ever faster rate, those MIS issues considered critical to a complete MIS educational base for our students are evolving. Therefore, it is vital that research continue to seek answers about the changing needs of the MIS student.

I am conducting a survey of randomly selected MIS faculty that explores the importance of those issues considered to be important and/or critical in the field of MIS today. In addition, I am seeking your perceptions as to those areas you perceive to be critical to the success of the MIS area five years from now.

Would you help in this effort by participating in the initial pilot study? Please take a few minutes to contribute to this study by completing the survey and providing any suggestions or criticisms of the attached instrument. The results of your evaluation will be used only to evaluate the effectiveness of the instrument and will in no way be identified with specific faculty members or colleges/universities.

Please respond by December 15, 1989. Your cooperation will be greatly appreciated.

Sincerely

Pamela J. Jackson  
Assistant Professor

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Attachment

# MIS MANAGER'S SURVEY

## Demographic Data

Control Code \_\_\_\_\_

The demographic data requested below is important in profiling the respondents of the survey. This section is to gather the information about your background for statistical purposes only, so that your answers may be compared to others like yourself. *This information will be kept strictly confidential.* Please answer the following questions by placing a check in the appropriate blank(s).

### Company Information:

1. What is the primary business purpose (mission) of your firm?

- \_\_\_\_\_ Finance (Banking, Insurance, Securities, Credit, Real Estate)  
 \_\_\_\_\_ Government (Military, Federal, State, Municipal)  
 \_\_\_\_\_ Service (Business, Education, Medical, Legal)  
 \_\_\_\_\_ Manufacturing  
 \_\_\_\_\_ Other \_\_\_\_\_ (Please Specify)

2. In what geographic area of the country are you currently working?

- \_\_\_\_\_ Eastern (CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT)  
 \_\_\_\_\_ Southern (AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV)  
 \_\_\_\_\_ North Central (IA, IL, IN, MI, MN, MO, OH, WI)  
 \_\_\_\_\_ Mountain Plains (CO, KS, ND, NE, NM, OK, SD, TX, WY)  
 \_\_\_\_\_ Western (AK, AZ, CA, HI, ID, MT, NV, OR, UT, WA)  
 \_\_\_\_\_ Other \_\_\_\_\_ (Please Specify)

3. Annual MIS/DP budget (including Telecommunications):

- \_\_\_\_\_ Under \$100,000  
 \_\_\_\_\_ \$100,001 - \$250,000  
 \_\_\_\_\_ \$250,001 - \$500,000  
 \_\_\_\_\_ \$500,001 - \$1,000,000  
 \_\_\_\_\_ \$1,000,001 - \$5,000,000  
 \_\_\_\_\_ Greater than \$5,000,000

4. Number of employees in the MIS/DP department? (Check One)

- \_\_\_\_\_ 1 - 10  
 \_\_\_\_\_ 11 - 50  
 \_\_\_\_\_ 51 - 100  
 \_\_\_\_\_ 101 - 500  
 \_\_\_\_\_ 501 - 1,000  
 \_\_\_\_\_ Over 1,000

### Personal Information:

1. What is the highest level of education that you have achieved? (Check One)

- \_\_\_\_\_ Completed Doctoral Degree  
 \_\_\_\_\_ Completed Masters Degree  
 \_\_\_\_\_ Completed 4-year College  
 \_\_\_\_\_ Completed High School  
 \_\_\_\_\_ Other \_\_\_\_\_ (Please Specify)



2. What description best describes the major of the highest college degree completed?  
(Check One)

- Management Information Systems  
 Business/Accounting  
 Computer Science  
 Engineering  
 Education  
 Liberal Arts  
 Other \_\_\_\_\_ (Please Specify)

3. Which of the following categories best describes your annual salary in your current position?  
(Check One)

- Under \$20,000  
 \$20,000 to \$29,999  
 \$30,000 to \$39,999  
 \$40,000 to \$49,999  
 \$50,000 to \$59,999  
 \$60,000 to \$69,999  
 \$70,000 to \$79,999  
 \$80,000 to \$89,999  
 Over \$90,000

### **Request for Survey Results:**

If you would like a copy of the survey results, write to the address listed below.

Pamela J. Jackson, Assistant Professor  
 Department of Business Education and Office Administration  
 219 Applied Sciences Building  
 East Central University  
 Ada, OK 74820

*Instructions:* Please rate the following MIS issues based on your perceptions of their importance in the field of MIS both today and five years from today. Circle the appropriate number for each item using the following scale:

	Not Important	Of Little Importance	Somewhat Important	Important	Very Important					
	1	2	3	4	5					
	Today				In 5 years					
1. Management Information System (MIS) Strategic Planning	1	2	3	4	5	1	2	3	4	5
2. Executive Information System (EIS) Strategic Planning	1	2	3	4	5	1	2	3	4	5
3. Understanding the Role and Contribution of MIS to General Management	1	2	3	4	5	1	2	3	4	5
4. Understanding the Role and Contribution of EIS to General Management	1	2	3	4	5	1	2	3	4	5
5. Aiding and Facilitating Organizational Learning and Use of MIS	1	2	3	4	5	1	2	3	4	5
6. Using Information Systems for Competitive Advantage	1	2	3	4	5	1	2	3	4	5
7. Aligning the MIS Organization with that of the Parent Organization	1	2	3	4	5	1	2	3	4	5
8. Promoting Effective Use of the Data Resource	1	2	3	4	5	1	2	3	4	5
9. Developing an Information Architecture	1	2	3	4	5	1	2	3	4	5
10. Facilitating and Managing End-User Computing	1	2	3	4	5	1	2	3	4	5
11. Integrating Data Processing, Office-Automation, and Telecommunications	1	2	3	4	5	1	2	3	4	5
12. Planning, Implementing and Managing Telecommunications	1	2	3	4	5	1	2	3	4	5
13. Measuring MIS Effectiveness and Productivity	1	2	3	4	5	1	2	3	4	5
14. Specifying, Recruiting, and Developing MIS Human Resources	1	2	3	4	5	1	2	3	4	5
15. Improving the Effectiveness of Software Development	1	2	3	4	5	1	2	3	4	5
16. Enabling Electronic Data Interchange and Multi-Vendor Integration	1	2	3	4	5	1	2	3	4	5
17. Planning and Managing the Applications Portfolio	1	2	3	4	5	1	2	3	4	5
18. Planning, Implementing, and Managing Factory Automation	1	2	3	4	5	1	2	3	4	5
19. Determining Appropriate MIS Funding Levels	1	2	3	4	5	1	2	3	4	5
20. Selecting and Integrating Packaged Applications Software	1	2	3	4	5	1	2	3	4	5
21. Improving Information Security and Control	1	2	3	4	5	1	2	3	4	5
22. Managing the Impact of Artificial Intelligence/Expert Systems	1	2	3	4	5	1	2	3	4	5
23. MIS Ethics	1	2	3	4	5	1	2	3	4	5
24. The Impact of Personal Computers in an Institutional Environment	1	2	3	4	5	1	2	3	4	5
25. The Impact of Decision Support Systems	1	2	3	4	5	1	2	3	4	5

	<u>Today</u>	<u>In 5 years</u>
26. The Impact of Hardware/New Technologies	1 2 3 4 5	1 2 3 4 5
27. Promoting Management of the Data Resource	1 2 3 4 5	1 2 3 4 5
28. Managing new Software Technologies (i.e. 4GL's, CASE)	1 2 3 4 5	1 2 3 4 5
29. Communicating with End-users	1 2 3 4 5	1 2 3 4 5
30. Managing the User Services Center	1 2 3 4 5	1 2 3 4 5
31. Communicating with Upper-Level Management	1 2 3 4 5	1 2 3 4 5
32. Other	1 2 3 4 5	1 2 3 4 5

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# MANAGEMENT INFORMATION SYSTEMS FACULTY SURVEY

Control Code \_\_\_\_\_

## Demographic Data

The demographic data requested below is important in profiling the respondents of the survey. This section is to gather the information about your background for statistical purposes only, so that your answers may be compared to others like yourself. *This information will be kept strictly confidential.* Please answer the following questions by placing a check in the appropriate blank (s).

1. In which of the following categories would you place your current faculty position: (Check one)

- Professor  
 Associate Professor  
 Assistant Professor  
 Instructor  
 Other (Please Specify) \_\_\_\_\_

2. Please indicate the highest level of college/university degree completed. (Check One)

- Doctoral Degree  
 Masters Degree  
 Bachelors Degree  
 Other (Please Specify) \_\_\_\_\_

3. What description best identifies the academic department for which you are a member. (Check one)

- Management Information Systems  
 Business Administration  
 Accounting  
 Computer Science  
 Engineering  
 Education  
 Liberal Arts  
 Other (Please Specify) \_\_\_\_\_

4. Are you now or have you previously held a MIS or MIS related position in the private sector?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

If Yes, please indicate (check as many as apply) what your primary responsibilities are/were.

- General MIS Management  
 Information Resource Management  
 Systems Development  
 Education/Training  
 Planning  
 Consulting  
 Data Base Management  
 Telecommunications  
 Accounting  
 Other (Please specify) \_\_\_\_\_

5. What courses are you currently teaching for this academic year? Check each area that applies.

- Management Information Systems  
 Systems Analysis and Design  
 Data Base Management  
 Microcomputer Applications  
 EDP Auditing  
 Programming  
 Telecommunications  
 Other (Please Specify) \_\_\_\_\_

### Demographic Data on College/University

The demographic data requested below which pertains to the institution for which you are affiliated is for profiling the institutions. This section is to gather the information for statistical purposes only, so that your answers may be compared to other institutions like yours. Again, this information will be kept strictly confidential. Please answer the following questions by placing a check in the appropriate blank(s):

1. Approximately what is the undergraduate enrollment in your college/division? (Check One)

- less than 1,000  
 1,000 - 1,999  
 2,000 - 3,999  
 4,000 - 5,999  
 greater than 6,000

2. Does your institution offer an undergraduate major in MIS/CIS/IS?

Yes  No

3. Does your institution offer a Masters degree in MIS/CIS/IS?

Yes  No

4. Does your institution offer a Ph.D., D.B.A., or Ed.D. degree in MIS/CIS/IS?

Yes  No

If yes, please check those which apply.

- Ph.D.  
 D.B.A.  
 Ed.D.

### Request for Survey Results:

If you would like a copy of the survey results, write to the address listed below.

Pamela J. Jackson, Assistant Professor  
 Department of Business Education and Office Administration  
 219 Applied Sciences Building  
 East Central University  
 Ada, OK 74820

2  
VITA

Pamela J. Jackson

Candidate for the Degree of  
Doctor of Education

Thesis: THE IMPORTANCE OF SELECTED CRITICAL ISSUES IN THE  
FIELD OF MANAGEMENT INFORMATION SYSTEMS AS PERCEIVED  
BY MIS MANAGERS AND MIS FACULTY

Major Field: Business Education

Biographical:

Personal Data: Born in Holdenville, Oklahoma, June 18,  
1951, the daughter of Mildred and C. C. King.

Education: Graduated from Stillwater High School,  
Stillwater, Oklahoma, in May 1969; received  
Bachelor of Arts Degree in Sociology from Trenton  
State University at Trenton, New Jersey in May,  
1974; received Master of Science Degree in Business  
Education from Oklahoma State University at Still-  
water in December, 1982; completed requirements  
for Doctor of Education degree at Oklahoma State  
University in December, 1990.

Professional Experience: Instructor, Department of  
Business/Office Technology, East Central University  
in Ada, Oklahoma, January, 1983, to May, 1986;  
Teaching Assistant, Department of Administrative  
Services and Business Education, Oklahoma State  
University, August, 1986, to May, 1988; Coordin-  
ator and Instructor for Minority Training Program,  
Office of Affirmative Action, Oklahoma State Univ-  
ersity, August, 1986 to May, 1988; Assistant  
Professor, Department of Business/Office Technology,  
East Central University, Ada, Oklahoma, August,  
1988, to present.

Professional Organization Membership: National Business  
Education Association; Oklahoma Business Education  
Association, Delta Pi Epsilon; Phi Delta Kappa;  
and Phi Kappa Phi.