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COMPARATIVE ANALYSIS OF USER EXPERIENCE WITH
CENTRALIZED VS. DECENTRALIZED MANAGEMENT OF
ACADEMIC COMPUTING, ADMINISTRATIVE COMPUTING AND
TELECOMMUNICATION FUNCTIONS WITHIN AN INSTITUTION
OF HIGHER EDUCATION

By

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ABSTRACT

COMPARATIVE ANALYSIS OF USER EXPERIENCE WITH CENTRALIZED VS. DECENTRALIZED MANAGEMENT OF ACADEMIC COMPUTING, ADMINISTRATIVE COMPUTING AND TELECOMMUNICATION FUNCTIONS WITHIN AN INSTITUTION OF HIGHER EDUCATION

By

Jerry A. Nagy

The purpose of this study was to present an analysis of user experience with different management organizations (centralized vs. decentralized) and styles of management. The analysis was accomplished by estimating perceived user satisfaction with the functions performed and recording users opinions of styles.

The sample size consisted of 26 institutions of higher education considered by the researcher to be peer institutions with Ferris State University. The criteria for including an institution in the study was headcount enrollment of student body; state funding for a public school; approximately the same type and number of undergraduate, graduate and professional programs; and campus size and location. Twenty six institutions were selected for inclusion in the study. Survey instruments were sent to the executive management and academic deans of the schools.

In the survey respondents were asked to identify whether

their school had a centralized organization to manage the functions of computing and communications or a decentralized organization.

In the survey respondents were asked to identify their managers management style choosing between passive, autocratic, democratic, consultative or participative. In addition, respondents were asked to record their satisfaction with: service provided; current and future budget planning; access to resources by faculty, staff and students; staff recruiting and development; and support provided for information technology resources. MANOVA was used to examine the data related to each research question. The results revealed there was no significant difference at the .05 level between the satisfaction produced by the centralized organization or the decentralized organization. However, it was determined that the centralized organization managed by a Chief Information Officer (CIO) received the highest ratings for using the "best" management styles of consultative or participative management.

An implication for future research might include a comparison of departmental and institutional mission statements. This would help determine the correlation, if any, between department mission statements that support the institutions mission and departments that use the "best" management styles.

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CHAPTER I

Introduction

"In the last decade, institutions of higher education have invested heavily in information technology resources. Organizational structures, often the most traditional parts of our universities, have been changing in response to the growing importance of information technology resources to the achievement of institutional missions." (CAUSE-EDUCOM, 1988) The changes to these traditional organizational structures have not occurred in a uniform manner throughout higher education institutions.

During the decade of the 1980's, there was considerable discussion about the concept of the Chief Information Officer (CIO) position at colleges and universities. The researcher attended several conferences where informal discussions with colleagues revealed the thinking that the proliferation of low cost computing devices coupled with advances in voice/data/video telecommunications equipment would necessitate a politically sensitive czar to coordinate and manage information technology resources.

As information became more widely used and more important as

a resource to the organization, it had to be attended by the appropriate official. This official would establish policies and procedures and maintain central control over all of the organization's information resources.

In addition, for this person to be effective, the person would have to be placed high enough in the organizational structure to exert bonafide influence. This person should be equal in rank to the Chief Financial Officer and Chief Operating Office, hence the name "Chief Information Officer" or CIO (Synnott and Gruber, 1981).

In contrast, it has been estimated that less than 10 percent of the nation's institutions of higher education have implemented the centralized management concept (Fleit, 1989). Most schools have found it either to be more practical, more expedient, or more effective to maintain separate or decentralized management units for computing and telecommunications functions.

A centralized management organization provides control of all of the primary activities (budgeting, planning, staffing, etc.) of academic and administrative computing and telecommunications. The person charged with managing these activities in a centralized management is the Chief Information Officer (CIO) who reports to a high level institution executive.

The decentralized management organizational structure is typified by management of information technology resources that has been relegated to staff specialists in a specific area. Quite often, these organizational structures result in the individual managers reporting within different divisions of the institution. For example, Administrative Computing could report to the Vice President of Business Affairs while Academic Computing reports to the Provost and Telecommunications reports to the Vice President of Student Affairs.

Statement of the Problem

The problem the researcher addressed in this study was to compare the perceived satisfaction achieved by different management organizations (centralized vs. decentralized) and management styles by measuring user satisfaction with the functions performed. Many educators have recognized the need for changes in organizational structures in order to respond to changing information technology resources.

Bonham (1983) wrote that "if computers are to have a lasting effect in the disciplines and intellectual work in academia, we must redesign organizational and academic structures."

Gilbert and Green (1986) stated that the technical revolution was changing the decentralized decision making points for technology issues by centrally locating this function under one manager, a "politically sensitive czar."

Howard (1980) recommended a management position similar to the Senior Information Manager studied by Ann Woodsworth (1986).

Ryland (1989), President of CAUSE (College and University System Exchange), wrote that "we have come full circle." She noted that in the 1950's and 1960's central computing organizations provided the Automatic Data Processing function. The 1960's and 1970's found a shift in focus from data processing to information processing and brought an "era of integration." The "individual computing era" began in the 1970's and 1980's and was brought about by the introduction of low-cost micro and mini computers. She writes that this individual computing era has caused us to return to a "central information technology organization (which) has evolved to become more a provider of services rather than a provider of (the) cycles (of) development and implementation. These services include training, education, consultation, support, and establishment of standards where appropriate." Ryland agreed with Woodsworth that the CIO is the leader of a centralized organizational structure with responsibility for academic and administrative computing and voice, data, and video communications.

An EDUTECH Report article (June, 1988) reported that the Information Resource Management idea put forth by Synnott and Gruber (1981) has gained wide acceptance but the idea of

the CIO is "cloaked in confusion, misunderstanding and negative criticism."

Another EDUTECH Report article (September, 1988) stated that the issue of whether to combine (centralize) support for academic and administrative computing and communications or to keep them separate (decentralize) has an additional issue that is complicating matters. If two formerly separate support organizations are combined into one, the result may be that the CIO is dealing with the management of two of everything: two communication networks, as well as, two sets of policies and procedures.

Purpose of the Study

The researchers' purpose in this study was to present an analysis of user experiences with different management organizations (centralized vs. decentralized) and styles of management for computing and communication. The analysis was accomplished by estimating perceived user satisfaction with the functions performed and recording the users opinion of style.

A comparison is presented between the methods of organization (centralized and decentralized) and management style, with regard to the services they provide within the University.

Research questions that were addressed include but were not limited to:

1. Which management style, if any, best characterizes the CIO or the decentralized managers:
 - the manager makes decisions independently;
 - the manager seeks advice from each user group, then makes decisions independently;
 - the manager actively engages user group members in problem definition and decision making;
 - the manager accepts majority rule;
 - the manager is passive.
2. Which management organization, if any, produced the highest level of satisfaction in providing voice, data, and video communication; academic and administrative computing; and library automation?
3. Which management organization, if any, produced the highest level of satisfaction in providing current and future budget planning for voice, data, and video communication; academic and administrative computing; and library automation?
4. Which management organization, if any, produced the highest level of satisfaction in providing access to information resources by students, faculty and staff?
5. Which management organization, if any, produced the highest level of satisfaction in providing staff recruiting and development of personnel in the areas of voice, data, and video communication as well as academic and administrative computing?

6. Which management organization, if any, produced the highest level of satisfaction in providing support for the information technology resources used by instructional programs and in faculty and administrative office automation activities?

Importance of the Study

The topic of this study had been discussed with the executive management of Ferris State University as well as the academic deans. Each person contacted reviewed the questionnaire. Each responded with enthusiasm that the study results were of great interest and benefit in view of the survey population. It was anticipated that the peers of Ferris State University at the other institutions would respond in a similar manner when they realized that this was a national study of comparable schools.

Typically, it is of interest to administrators to see how similar organizations respond to similar challenges facing higher education at the present time. The schools selected for this study (Appendix A) had similar characteristics as reported in the 1991 Peterson's Register of Higher Education: mostly rural as opposed to urban campuses; state funded; comparable degree programs; and size of student body. This study will serve as a foundation for helping executive and academic management in understanding the

quality of service currently being provided by their computing and telecommunication functions and the need, if any, for reorganizing to provide higher user satisfaction.

Limitations of the Study

The study was limited to a review of selected universities in the country that are considered to be peer institutions of Ferris State University (Appendix A).

The list of institutions was developed by the Institutional Studies Department at Ferris State University. The schools were selected after a computer data base search on demographic characteristics. The characteristics searched included headcount enrollment of the student body, the number of undergraduate and graduate programs, the teaching of occupational education programs, and a similar NCHEMS (National Center for Higher Education Management Systems) classification. The list produced by the demographic search was reduced to its present size after a manual review of Peterson's 1991 Register of Higher Education. The review of Peterson's Register eliminated institutions based on relevant characteristics such as public vs. private, rural location vs. urban, etc.

A questionnaire (Appendix B) was sent to each of these peer institutions. It was limited to the executive and academic

management (President, Vice Presidents and Deans) as listed in Peterson's Register.

Definition of Terms

The following terms are defined as used in this study:

Academic Computing - the department that assists faculty with developing computer literacy and using computers as an instructional delivery method.

Administrative Computing - the department that stores records and files that are accessed by the administrators of an institution of higher education to maintain, monitor and control data recorded on students, personnel, budgets and institution assets.

Automatic Data Processing - Data processing by means of one or more devices that use common storage for all or part of a computer program and also for all or part of the data necessary for execution of the program; that execute user-written or user-designated programs; that perform user-designated symbol manipulation, such as arithmetic operations, logic operations, or character-string manipulations; and that can execute programs that can modify themselves during their execution. Automatic data processing may be performed by a stand-alone unit or by several connected units.

Centralized Management - control of all of the primary functions of academic computing, administrative computing and telecommunications are located under one manager reporting to a high level institution executive.

CIO - Chief Information Officer, the person charged with managing all of the information technology in the institution.

Data Communication - the transfer of data between computers or computers and terminals using a variety of media (telephone wire, fiber optic glass, microwave radio signals) according to a specific data transmission protocol.

Decentralized Management - control of the primary functions of academic computing, administrative computing and telecommunications are located under separate, discrete managers contained within different divisions of the institution.

Distributed Computing - computing in which some or all of the processing, storage and central functions are dispersed among organization units.

Facsimile (FAX) System - a system for transmission of images. The image is scanned at the transmitter, reconstructed at the receiving station, and duplicated on paper.

Graphics - 1. The making of charts and pictures.
 2. Pertaining to charts, tables and their creation.
 3. Computer graphics, coordinate graphics, fixed-image graphics, interactive graphics, passive graphics, raster graphics.

Image Processing - computer graphics in which digital image data are stored, processed, retrieved, and displayed for applications such as processing satellite data, geology, microbiology, robotics, and textile design.

Information Processing - the systematic performance of operations on data in conjunction with a computer system to obtain, manipulate, duplicate, exchange, or communicate its meaning; for example, file management, word processing, document interchange, facsimile, videotext. See Automatic Data Processing.

Library Automation - the process that provides computer assistance to local and remote catalog searching of library holdings.

Local Area Network (LAN) - a data network located on the user's premises in which serial transmission is used for direct data communication among data stations.

Network - an arrangement of nodes and connecting branches made between voice and data stations for the purpose of information interchange.

Telecommunication - the transmission between two or more locations using telephone, telegraph, radio or television methods. Also, the transmission of data between computer systems or computer systems and terminals using telecommunication lines.

Transmission - the sending of a voice, data or video signal from one place for reception elsewhere. The dispatching of a signal, message, or other form of intelligence by wire, radio, telegraphy, telephony, facsimile, or other means.

Video Communication - the transmission of video signals ranging from compressed video (64 Kbps) to full motion video (92 Mbps) over telephone wire, coaxial cable, fiber optic and microwave signals. Video signals are transmitted for the purpose of closed circuit television, public television, teleconferencing, and uplink and/or downlink of satellite signals.

Voice Communication - the transmission of speech using telephone switching equipment transmitting over telephone wire, fiber optic glass and microwave radio signals. The telephone switching equipment is also used for facsimile telegraph.

Wide Area Network (WAN) - a network that provides communication services to a geographic area larger than that served by a local area network.

Organization of the Study

The dissertation includes five chapters. Chapter One contains an introduction, a statement of the problem, the purpose of the study, the value of the study, the limitations of the study, and a definition of terms.

Chapter Two contains a review of the literature that illustrates the extent to which institutions of higher education are moving toward centralized management of computing and communication functions or remaining decentralized. A review of the literature of management styles is included in this chapter.

Chapter Three contains a description of the design of the study, the population surveyed, the instrument and method of analysis used.

In Chapter Four, the findings of the study are discussed and illustrated. The data were analyzed using MANOVA.

The summary, conclusions, recommendation, and reflections of the study are presented in Chapter Five.

Chapter II

Review of the Literature

The researcher's purpose in this study was to determine end user satisfaction with the following six functions:

- voice communication
- data communication
- video communication
- academic computing
- administrative computing
- library automation

The six functions were studied within the context of an organization that was centralized under a Chief Information Officer, or a decentralized structure with many managers. Additionally, end users were asked to identify the management style of the manager or managers of the six functions listed above.

The objective in this research was to determine which organizational structure and which management style, if any,

produced the highest end user satisfaction. Further, there was an attempt to assess the efficacy of having a Chief Information Officer as opposed to a number of individual managers. Therefore a search of the literature was conducted in three areas:

- I The Chief Information Officer (CIO)
- II. Centralized - Decentralized Organizations
- III. Management Styles

I. The Chief Information Officer (CIO)

To understand the CIO position in an organization and the importance of the position in strategic planning, a review of literature was conducted to discover studies that defined the position of the CIO, outlined a CIO's duties, and differentiated this position from decentralized managers. Also reviewed were studies that dealt with the strategic importance of information technology to an organization and the effect of a CIO on institutional strategy. Other studies reviewed covered changing computing and communication technologies and the new management structures required to engineer and cope with the transformations. Finally, a paper was reviewed that described the developing role of the CIO and characteristics of higher education organizations which have established the CIO position.

The editors of The Technology Management Associates Newsletter for Information Executives conducted research and identified 11 duties that were most frequently used in a CIO's job description. The researchers determined that seven of these were not unique to the CIO but that all Information System (IS) executives were accountable for the functions. Those functions common to all IS executives were:

- 1 Coordinate use of resources
- 2 Integrate various technologies
- 3 Long range planning
- 4 Purchase of supplies and equipment
- 5 Design information resource infrastructure
- 6 Develop standards
- 7 Report status of activities to senior management

The functions that distinguished the CIO from IS executives were:

- 1 Create new opportunities
- 2 Help shape business plan
- 3 Deliver profitable results
- 4 Help other executives discover opportunities

The researchers stated the first seven functions were

operational in nature. However, the last four functions were strategic planning activities common to any top level executive manager.

Woodsworth (1986) found in a study of Senior Information Managers (or CIO's) that "30 out of 90 institutions had established a Senior Information Manager (CIO) position." This position had management responsibility for academic and administrative computing and telecommunications. The study concentrated on the role, responsibilities, reporting relationships and background of the Senior Information Manager. Also, it examined the relationships between this position and the Library Director. No attempt was made to determine user satisfaction with this centralized form of management. Woodsworth did not determine why 60 of the 90 institutions surveyed chose to remain with a decentralized organizational structure.

Every (1989) discussed in an EDUCOM bulletin building a strategy for information technology. Every believed there was a strong probability that organizational units which had been traditionally decentralized -- academic and administrative computing centers; libraries; telecommunication units for voice, data and video; and printing -- would be blended into a single centralized unit reporting to a senior level executive (CIO).

Pajak (1990) wrote that the job of the CIO is changing from an executive classified as a "utilitarian tactician" to a high ranking support staffer capable of developing a strategic plan to support the company's business plans. He states the emergence of the CIO as strategist and advocate of information technology rather than a custodian of resources may produce a contentious environment. He concluded that conflict will foster creativity, not complacency.

Robinson (1988) wrote that a true leadership role is required for information technology management. His conclusion is that the CIO position must be empowered with sufficient authority to implement improvements in mainstream functions critical to the institution.

Dillman and Hicks (1990) believe in order for an organization to successfully implement information technology for strategic advantage it will require a new, senior level information technology manager: the CIO. They reasoned that changing information technology presents a challenge to management to integrate "sources of information, network systems, and information processing into a cohesive infrastructure." This integration is complicated by the fact that traditional academic and administrative areas have overlapping information technology requirements. They concluded that the new technologies of

voice, data and video should not be managed with old organizational structures.

Fleit (1988) developed categories to separate higher education institutions from an information technology perspective. The categories are:

- I - the institution uses technology as a strategic resource; the title of the Senior Information System (IS) officer is CIO reporting to the President, Chancellor, or Provost; the CIO has a Ph.D. and came from academic management
- II - the institution uses technology as an aid in day-to-day operations; the title of the Senior IS officer is Computer Center Director reporting to a Vice President; the Director has a Masters Degree and came from a technical background
- III - technology is a source of confusion; the title of the Senior IS officer is MIS Director reporting to a Vice President; the Director has a Bachelor's Degree and came from a technical background

Dolence, Douglas and Penrod (1990) coauthored a paper on the CIO in higher education using Fleit's categories. They reported on the developing role of the CIO and characteristics of organizations which have established the CIO positions. They found "CIOs appear in organizations

that placed a premium on the effective management of information." Also, they found the CIO was expected to control and manage information technology resources.

II. Centralized - Decentralized Organizations

Universities differ in many ways including their organizational charts. Information services can be delivered by a variety of management methods. A debate in education today goes on between advocates of a centralized management structure for information technology and advocates of a decentralized structure.

Key issues in this debate are:

1. The relevance of the technology to the institution's goals
2. An information system that works in harmony with the entire campus community
3. End user satisfaction with the services provided
4. Uniform quality and quality control
5. Economies of scale

This review identified five relevant papers, written since 1982, containing the opinions and observations of six experts. In the papers the authors sought to explain their reasons for advocating one management system over another.

Dr. Paige Mulhollan, President of Wright State University, and Mr. Robert Scott, Vice President of Finance at Harvard University, addressed three questions in an article on information technology (1989):

1. What is an institution's organizational structure for information technology?
2. Why did the institution organize in this manner?
3. What are the pros and cons of this structure?

Dr. Mulhollan favors a centralized management structure for information technology. He reported strategic planning is a necessity for any institution and information technology is not exempt from this process. He stated strategic planning for information technology is critical because of the relevance of the technology to an institution's goals, and because of the cost of developing and implementing new technology. He commented that the direct result of the decentralized approach to planning for information technology results in the proliferation of microcomputers that is seen on almost every campus. Dr. Mulhollan's reasons why the management of information technology should be centralized are:

1. Only way to implement effectively the strategic plan for information technology
2. Only way to assess realistically the cost/benefits in relation to university strategic goals

3. Only way to establish institutional priorities and funding alternatives
4. Only sensible way to plan for operations cost and maintenance
5. Only way to "position" institution for changing technology
6. Best way to determine trade-off between technologies
7. Best way to protect existing investment in technology

Dr. Mulhollan concluded that the centralized organization that he was advocating would not be successful unless it "worked in harmony with the entire campus community." The central organization had to be able to provide service "better, faster, and cheaper" than any other organizational structure or it would not be perceived as adding value.

In the same article, Mr. Scott presented a different rationale in favor of decentralized organizations to manage information technology. He states the management of a college or university is complex and the management of information is also complex. Therefore, when the two are put together they produce an even more complex issue. He reports that institutions of higher education are seldom structured in a strict hierarchy (like military organizations) in large part due to their "entrepreneurial

character," and their ability and necessity to respond quickly to changing needs.

Mr. Scott commented that while administrators can "lead, support, encourage, suggest" they are not always in a position to "decide" especially when the decision may effect what is taught in the classroom and how it is taught. He states that decisions involving allocation of information technology resources for the classroom and for faculty research must be made at the local (decentralized) level. Another consideration he felt important was the size of the institution. A large institution such as Harvard would have a difficult time moving from a decentralized management structure to a centralized version.

Richard Nolan (1990) presented his opinions about why executives must transform their organizations in order to provided better service:

- o New technology + old organizations = disappointing results
- o New technology + new organizations = viability and competitive advantage

- o Information technology has changed the content of personnel in organizations. Top management is still composed of 5% of the staff. But middle management and knowledge workers have grown to 55% of the staff from 35%. This growth has occurred at the expense of operational and technical workers who have dropped from 60% of the staff to 40%.

Blackman (1991) wrote that the issue of centralized or decentralized management of information technology is not unique to higher education. He quotes an article by John Gardner in the Chronicle of Higher Education dealing with government and industry that "a root disease of bureaucracy is the tendency to centralize."

Kriegbaum (1982) wrote that centralization gained efficiencies by standardizing procedures and providing internal coordination. However, decentralization promoted effective decisions by making the decision close to the point where the decision would be implemented.

Mathezer (1985) wrote that organizational issues come down to "efficiency and effectiveness." He stated a central organization was more efficient with the inherent advantages of "control, uniform quality, and economics of scale." However, the decentralized organization was more responsive to user needs and produced greater user productivity.

David Freedman stated in an article in CIO, The Magazine for Information Executives that decentralization of information technology had been occurring for over 20 years in the banking industry, but that Hanover Trust Company reversed that trend and saved \$12 million a year in the process. He reported that global competition and banking deregulation forced Hanover Trust into "downsizing and restructuring." The bank realized their significant savings in equipment and personnel without losing quality of service or control of their operating divisions by moving to a centralized system of management.

III. Management Styles

An effective management style is not easy to define. Most people when asked to define an effective management style react in a similar manner to Supreme Court Justice Hugo Black who when asked to define pornography stated "I cannot - however, I know it when I see it."

The qualities that make up effective management in a production environment have been the subject of research as early as 1776. Since that beginning, researchers have defined and described management styles, and attempted to answer many questions, including:

- What are the traits of a manager that produces high marks when employees rate their managers?

- What management style produces the best results in a complex, technical environment?
- Is the management style that is most effective in a business setting the same style that will be effective in an educational setting?
- Are there any personality or situational variables which enhance or detract from a manager's actual or perceived effectiveness within the organization?

The field of human resource management with its techniques of effective personnel management has its origins in the professional field of production management. The development of production management began with the industrial revolution when the factory system replaced the home production system. The first recognition of management in a production environment (or production economics) was by Adam Smith who wrote Wealth of Nations in 1776. Smith outlined the economic advantages that result from a division of labor.

Babbage in On the Economy of Machinery and Manufacturers written in 1832 agreed with Smith's division of labor study but added that specialization of the work force would lead to different pay scales. Babbage argued that if one person performed all the tasks required in a production sequence that person would have to be paid at the highest level required in the sequence. Babbage also recognized the

division of labor and difference in pay between management and production labor.

Frederick Taylor's theories were presented in Scientific Management in 1912. He stated that the division of labor between worker and management required cooperation and mutual dependency that would result in fewer quarrels between the two groups. Taylor used his experience gained from working in machine shops to publish several writings dealing with methods engineering, work measurement, personnel management, industrial relations, and the division of labor between the worker and management.

These early studies did not address the issue of what constitutes an effective manager or what management style is the most effective.

The first major study of management styles was conducted by Lippitt and White (1958). They studied the effect the autocratic, consultative-participative, and passive styles had on the behavioral reaction of workers in the group. They found that the workers in a group led by a consultative-participative style of manager had "greater group purpose and harmonious interaction." By contrast, the group led by an autocratic manager exhibited more aggression and hostility toward each other and had less group unity. They found that the workers in a group led by a passive

manager had lower efficiency and less satisfaction with their job.

Uris (1963) states that a cooperative person works better with a consultative-participative manager while an individualist who is very familiar with his/her job functions works better under a passive manager.

Korman (1966) found in his study that there was a low correlation in performance among managers who were rated high in both task orientation and people orientation. He found that there was a high correlation in performance among managers who had high consideration for people and their job satisfaction. He also states that when the demand for production is great those managers that stress the task "tend to get more productivity."

Lowin (1968) studied management styles as they applied to the work setting. He determined that autocratic managers did not give credit to employees for their suggestions and, as a result, there was no motivation for a subordinate to perform beyond minimum expectations. In a consultative-participative system workers were more involved in the work setting and the quantity and quality of suggestions lead to higher performance standards.

Fiedler (1976) emphasized three things that a manager must determine before he/she settles on a management style:

1. Are relationships between the manager and the employees good or bad?
2. Are the tasks performed by the employees in the group highly structured and routine or do the tasks demand a high degree of creativity and innovation?
3. Is the manager's power position weak or strong?

He writes that where relationships are good, tasks are structured and routine, and the manager has a strong position, the manager's management style can be autocratic. However, if poor relationships exist or the employees perform complex tasks or the manager has limited authority he/she must display a consultative-participative management style.

Golightly (1977) wrote that each manager's style was different and ranged from passive to autocratic. He stated that the manager's style must match the organizations current needs and circumstances. He used as examples the contrasting styles of Patton and Eisenhower in WW II. Patton's style continually got him in so much trouble that he seemed finished as a field commander. But his style was perfect for leading the Third Army to success in the Battle

of the Bulge. Eisenhower, on the other hand, did not possess Patton's "field commander" style but his own style was well suited to being Supreme Commander which required resolving conflicts from opposing views and demands.

Golightly identified ten management styles in his study - management by:

1. Inaction
2. Detail
3. Invisibility
4. Consensus
5. Manipulation
6. Rejection
7. Survival
8. Despotism
9. Creativity
10. Leadership

Several researchers suggested that the success of a particular management style depends on the personalities of the manager and the worker. McKenna (1978) wrote that a "hostile individual performs better under an autocratic manager."

In his research Glube (1978) states that empathy is a large part of a successful manager's leadership style. His

research indicates that where a manager was empathetic to an employee and able to adjust his/her style to fit the situation, this produced higher productivity and higher job satisfaction among the workers.

Bogard (1979) stated that management styles range from the autocrat who makes decisions for the group to the passive leader who establishes no goals and does not assume responsibility for the groups actions or conclusions. He states that effective leadership requires the manager to manipulate events to arrive at a desired goal. He also states that the participative-consultative manager gives the impression of being people oriented while the autocratic manager appears to be task oriented. Bogard also makes the point that the autocratic style of leadership may be effective when an emergency task must be accomplished quickly.

Margerison (1980) studied developments in organizations. He wrote that the managers that practiced participative management required greater understanding of how employees view their culture and must emphasize standards, values and principles. Margerison asked the question "Is there a best style of leadership?" and answered it by stating "that no one management style is effective in all situations." A similar thought was submitted by Ridge (1989) who reported General George Patton's observation that "War and the

management of war is an art and as such is not susceptible to explanation by fixed formula."

Park (1980) wrote an article contrasting "management as a service," "management as human relations," and "management as an art." He reasoned that management was not just one of these but rather a combination of all three. He reported on the work being done by the Higher Education Management Institute which is administered by the American Council on Education. The Institute has defined several characteristics of effective management, one of which states that an effective management style is "participation in decision making."

Quick (1980) wrote that he favored a "democratic, participative style" himself but cited as an example the late George Szell, the former director of the Cleveland Orchestra. Szell knew the employees (the 100 musicians in the orchestra) wanted results and in order to produce high quality music he had to be an autocratic manager. Szell's style produced consistently high performance that "gratified everyone including Szell." Quick concluded that achieving superior performance results was made possible through employee motivation rather than leadership style.

Harris (1989) studied leadership characteristics of managers of successful business enterprises and the principals of

K-12 schools which had been cited for excellence. He concluded there were five factors in common between the business managers and the school principals. The most dominant factor was participatory decision making. The less dominant factors were trust, staff development, independent action, and job knowledge.

Bragar (1990) studied effective leadership practices for managers. She found the participatory management style that included other people in the decision making process highly correlated with effective leadership. She also determined that a manager that "cared" about his/her staff and made an effort to develop people's talents was an effective leader.

De Graw (1990) conducted a study of the congruence of culture and leadership style and the effect of these factors on the comprehensiveness of strategic choices. She determined that leadership style was a better predictor of dominant change strategy than the environment of the organization or the culture of the organization.

Parisian (1986) reported on the skills and management styles required by managers of information technology functions. Her study compared managers in industry to managers in education and found that technical skill was more important to industry while cooperation and coordination was more important to education.

Mulhollan (1989) wrote that the centralized management of information technology "definitely did not mean that there was an autocratic force" making all decisions.

Dolence, Douglas and Penrod (1990) surveyed CIOs in higher education and asked them to "describe the primary elements of their management style." The researchers reported "a remarkable consensus in the management style employed by CIOs" as defined by the CIO. The primary descriptors used were "consensus building" and "participating." No effort was made in this study to record how the users of the services managed by the CIOs perceived the CIO's management style.

Summary

Le Duc (1991) wrote that the issue of management style in information technology organizations would be "fertile grounds for research and bemusement." He stated that in order for the efforts of the information technology organizations to be successful the senior administrator of these functions must have the trust and cooperation of all levels of administration.

No studies were found by this researcher that investigated the management style of the managers of computing and communication functions to determine the management styles

perceived by users of the services.

Nor were any studies or articles found that measured the satisfaction of the users of the computing and communication functions with the services provided. Lastly, no studies were found that compared user satisfaction with the organizational structure of the service provider.

Thus, the need for this study was reinforced by the absence of published materials dealing with a comparative analysis of user experiences with different organizational structures of computing and communication functions.

CHAPTER III

Methodology

The researchers' purpose in this study was to compare the perceived satisfaction achieved by different management organizations (centralized vs. decentralized) and management styles by measuring user satisfaction with the functions performed.

Population of Study

The user satisfaction was measured by surveying a list of selected personnel in higher education institutions considered by Ferris State University to be peer institutions (see Appendix A for a listing).

The criteria to include an institution in the study included headcount enrollment of the student body; state funding for a public school; approximately the same type and number of undergraduate, graduate and professional programs; and campus size and location.

The survey instrument (Appendix B) was mailed to executive

management and academic deans of the schools listed. The names and addresses of the executives were obtained from Peterson's 1991 Register of Higher Education. The following is an example of the positions surveyed using Ball State University as a model:

President

Vice President of Business Affairs

Provost

Vice President of Student Affairs

Dean, College of Applied Science and Technology

Dean, College of Architecture and Planning

Dean, College of Business

Dean, College of Fine Arts

Dean, College of Sciences and Humanities

Teachers College

Vice President of Advancement/External Relations

Dean, Graduate School and Research

It was estimated that ten to fifteen responses would be sought from the 26 institutions listed. No sample was drawn from the population of schools since the entire population was surveyed.

The Survey Instrument

The survey form was designed to answer the research questions dealing with user satisfaction of the management of various functions.

The survey instrument, which was designed specifically for this study, was used to explore each of the research questions. The first two questions on the survey identified if the institution had a CIO, indicating a centralized management structure or individual managers of decentralized functions and what was that person's management style. The remaining questions on the survey were designed to measure user satisfaction with the services provided by the CIO or by the individual managers. Each question was designed to produce a quantitative response using a five point Likert type scale. The responses ranged from 5, "Very Satisfied" to 1, "Not Satisfied."

Respondents were provided with an opportunity to make comments concerning their perception of the management of the services that they receive. A portion of the survey instrument also provided the necessary space for the response. Respondents were asked if they would be willing to participate in a telephone or personal interview to discuss and comment on this subject. The narrative comments about their experiences with different management organizations

and styles is reported in Chapter Four.

Respondents were also provided with an opportunity to request a summary of the survey results. In order to maintain the confidentiality of the respondent, they were asked to indicate their interest in receiving a copy of the summary by sending a business card under separate cover. The respondent's name did not appear on the survey form.

Endorsement

Support from Ferris State University was obtained for this study. Permission was sought and received to use Ferris State University stationery and mailing privileges. Ferris also provided support by allowing institutional travel for visiting any nearby universities for a personal interview. Use of the various copy facilities and programming support for Statistical Analysis on mainframe and micro computers was also granted. An endorsement letter was prepared by Mr. Roy Tiede, Vice President of Business Affairs (Appendix C).

Pilot Test

The survey instrument had been pilot tested at Ferris State University. The questionnaire was distributed to the

following Ferris State University executive management positions:

President

Assistant to the President

Vice President of Business Affairs

Vice President of Academic Affairs

Associate Vice President of Academic Affairs

Dean of the Library

Dean of Lifelong Learning

Dean of the College of Education

The personnel in these positions were asked to complete the form and return it with comments about any problems they experienced in completing the form. Their suggestions were incorporated into the study.

The questionnaire and introductory letter (see Appendix E) were sent to Mr. Robert Fletcher, Dean of Academic Services at Grand Valley State University. His comments and suggestions were also incorporated into the questionnaire and introductory letter.

Data Collection

A log was prepared to track the mailing activity and response with each of the executive managers selected from

Peterson's Register. The log utilized the following format:

	Date	Follow Up		Summary	
	<u>Mail</u>	<u>Return</u>	<u>Reminder</u>	<u>Call</u>	<u>Requested</u>
<u>No.</u>					
001	X/X/X	X/X/X	X/X/X	X/X/X	Yes/No
002					

The mailing of the survey form began on September 6, 1991. An introductory letter was prepared to explain the purpose of the study. The letter was reviewed with the Ferris executive management participating in the pilot test. A copy of the letter is included in Appendix E. The mailing list was entered on an IBM PS/2 model 50 and was merged with the introductory letter. Labels were printed from the same database for the envelopes. Ferris envelopes and letterhead stationery were used. Each letter was individually signed with ink and the envelopes were affixed with first class stamps. Included with the introductory letter and survey form was a stamped, self-addressed return envelope.

Two weeks after the mailing of the survey form, a follow up postcard reminder was sent to those managers who had not responded yet. Three weeks after the mailing of the postcard, a personal telephone call was made to the non-respondents.

The completed log is included in the final report.

Design of Survey Form

The survey form was designed using the system recommended by Dillman (1978). The survey was in booklet form measuring 5 1/2" X 8 1/2". The front cover provided information concerning the purpose of the form while the back cover provided room for comments. The design of the form was intended to make the response as easy as possible.

Every effort was made to make all correspondence appear professional so as to encourage a response. The stationery and envelopes were the same as that used by the Information Services and Telecommunications Department at Ferris State University for all external correspondence.

The weight of the paper was 24 pound. It was grey in color with the school name printed in maroon. The Information Services and Telecommunications name was printed in maroon. The survey form was printed by a Xerox 3700 laser printer on 20 pound paper. The cover design was printed in maroon and all internal printing was in black print.

Coding and Data Entry

As surveys were returned the date received was entered on the survey log. Respondents who included a business card were recorded on the log for subsequent mailing of the summary of the results. Each survey was reviewed to see if a respondent submitted a comment that should receive an immediate response. A "thank you" letter was sent to each respondent.

Responses to each quantitative question were entered into a computer - the Ferris State University IBM mainframe computer for subsequent analysis using SPSS-X (the Statistical Package for Social Sciences). The data entered during this step were printed for sight review to check for accuracy.

Statistical Analysis

There were seven questions proposed for this study. Questions 1 and 2 identified the type of management structure in place at the institution. If the school had a centralized management structure Question 1 identified the title of the position, who the position reported to, and what management style the CIO used. If the school had a decentralized management structure Question 2 identified the

title of the manager of each function, who the position reported to, and what management style each manager utilized. Questions 3 through 7 were a Likert type question designed to query the respondent as to their level of satisfaction with the management of academic and administrative computing and communications functions. MANOVA (multi-variate analysis of variance) was used for the examination of the data related to each research question.

MANOVA investigates the relationship between an independent variable with two or more categories and two or more dependent variables. Using MANOVA in this type of situation is preferred to ANOVA (analysis of variance) since use of ANOVA could distort type I error rates while ignoring the possibility that some composite of the variable may provide the strongest evidence of reliable group differences (Summer, 1985).

The respondents were provided an opportunity to add comments related to their experiences with the management of computing and communication functions. The responses were recorded and analyzed for any patterns that emerged.

Summary

The researchers' purpose of this study was to present an analysis of user experiences with different management

structures and management styles for computing and communication. In order to accomplish this, a quantitative research method was used.

The method employed a specially designed questionnaire for the purpose of determining user satisfaction with the management functions that they receive. The data were analyzed on one of the computers at Ferris State University using MANOVA for the examination of data.

Chapter IV

Findings

The study was designed to collect and analyze information to determine which management structure produces the highest level of user satisfaction: a centralized management structure or a decentralized structure for the management of voice, data and video communications; academic and administrative computing; and library automation. The study was also designed to collect and analyze information to determine if a particular style of management was evident in either organizational structure. The methodology used in the study was outlined in Chapter III. The qualitative and statistical analysis of the data that were collected are presented as follows.

Survey Respondents

Survey instruments were mailed to 250 individuals in 26 universities who were listed in the 1991 Peterson's Register of Higher Education. One hundred forty three responses were received in total representing the 26 universities. Initial responses numbered 117. Seventeen responses were received after the first follow-up and nine were received after the second follow-up. The over-all response rate was 57.2%. A

listing of the survey group is shown in the log in Appendix F.

Twelve of the schools reported that a decentralized management structure was in place at their institutions and 14 reported a centralized structure. The number of respondents from each school is shown in Table 4.1.

Table 4.1 - Number of Respondents by School by Management Structure

<u>Management Structure</u> <u>Decentralized</u>	<u>Number of Respondents</u>	<u>Management Structure</u> <u>Centralized</u>	<u>Number of Respondents</u>
School 1	8	School 13	5
School 2	4	School 14	9
School 3	7	School 15	1
School 4	4	School 16	6
School 5	6	School 17	5
School 6	5	School 18	3
School 7	4	School 19	7
School 8	5	School 20	5
School 9	5	School 21	4
School 10	7	School 22	7
School 11	8	School 23	5
School 12	<u>8</u>	School 24	5
TOTAL	71 49.7%	School 25	5
		School 26	<u>5</u>
		TOTAL	72 50.3%

Total Both Groups 143 100%

Research Question I

Which management style, if any, best characterizes the Chief Information Officer (CIO) or the decentralized managers:

- o the manager makes decisions independently - **autocratic**
- o the manager seeks advice from each user group, then makes decisions independently - **consultative**
- o the manager actively engages user group members in problem definition and decision making - **participative**
- o the manager accepts majority rule - **democratic**
- o the manager is **passive**.

The survey results are depicted graphically in the pie charts shown in the following pages. The results are also shown in tabular form in Appendix I, Table I.1.

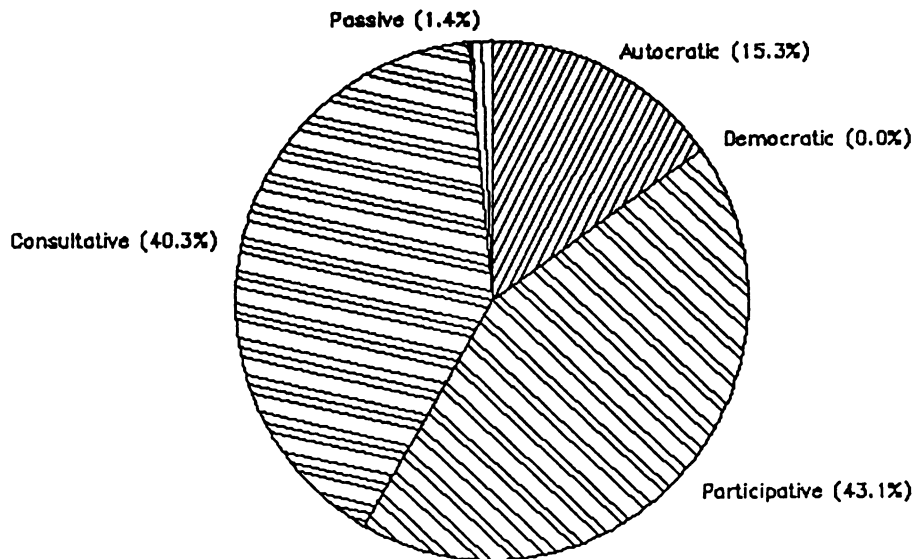


Fig. 4.1 -- Chief Information Officer
Centralized Management Styles

Centralized Management Results

The majority of the respondents from the centralized schools reported their CIO practices a "participative" management style (43.1%). This rating was closely followed by those respondents who reported their CIO used a "consultative" management style (40.3%). The "autocratic" management style was reported by 15.3% of the respondents, the "passive" management style by 1.4%, and none of the respondents considered their CIO to practice a democratic management style. The combined ratings for the CIOs who practiced the "consultative" or "participative" management styles was 83.4%.

Decentralized Management Results

The combined ratings for those decentralized managers who practiced the "consultative" or "participative" management styles ranged from a low of 57.7% for the Voice Communication manager to a high of 82.9% for the Library Automation manager.

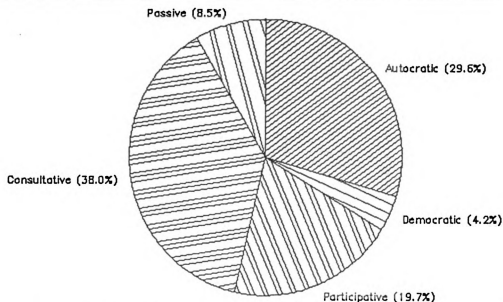


Fig. 4.2 -- Voice Communication Manager (Decentralized) Management Styles

Voice Communication Manager

The majority of the respondents from the decentralized schools reported their voice communication manager practices a "consultative" management style (38.0%). The rating from these respondents who considered this manager used a "participative" style was 19.7%. The total reported for these two management styles was 57.7%, far lower than the 83.4% reported for the CIO for the same two.

A large number of respondents (29.6%) considered their voice communication manager to be "autocratic," the highest recorded rating for this management style for any of the decentralized managers or the CIO. The "passive" management style was reported by 8.5% of the respondents and the "democratic" style by 4.2%

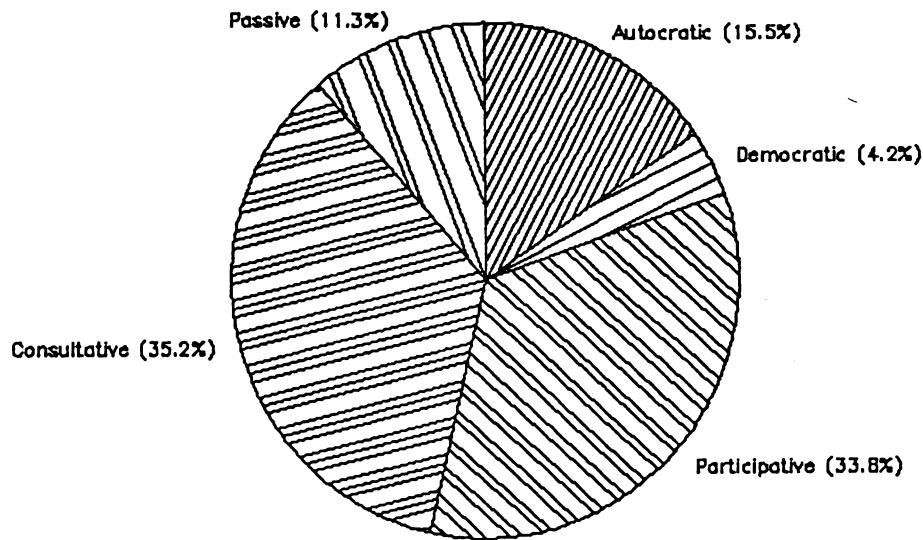


Fig. 4.3 -- Data Communication Manager (Decentralized)
Management Styles

Data Communication Manager

The majority of the respondents from the decentralized schools reported their Data Communication manager practices a "consultative" management style (35.2%) followed closely by those who considered the manager to practice a "participative" style (33.8%). The combined rating for these two styles was 69.0%, considerably lower than the 83.4% rating for the CIO

The number of respondents reporting the "autocratic" style (15.5%) was comparable to the CIO (15.3%). The "passive" management style was reported by 11.3% of the respondents and the "democratic" style by 4.2%.

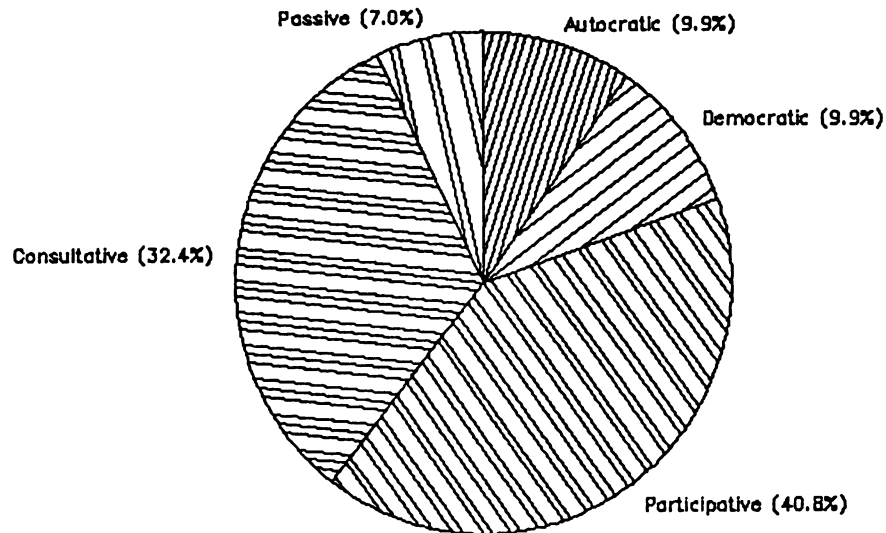


Fig. 4.4 -- Video Communication Manager (Decentralized)
Management Styles

Video Communication Manager

The majority of the respondents from the decentralized schools reported their Video Communication manager practices a "participative" management style (40.8%). The respondents reported the "consultative" style (32.4%) for this manager as a close second. The combined total for these two management styles reported for the Video Communication manager was 73.2%, almost 10% less than the response for the CIO.

The "autocratic" and "democratic" style responses were identical at 9.9% of the responses and the "passive" management style was reported by 7.0% of the respondents.

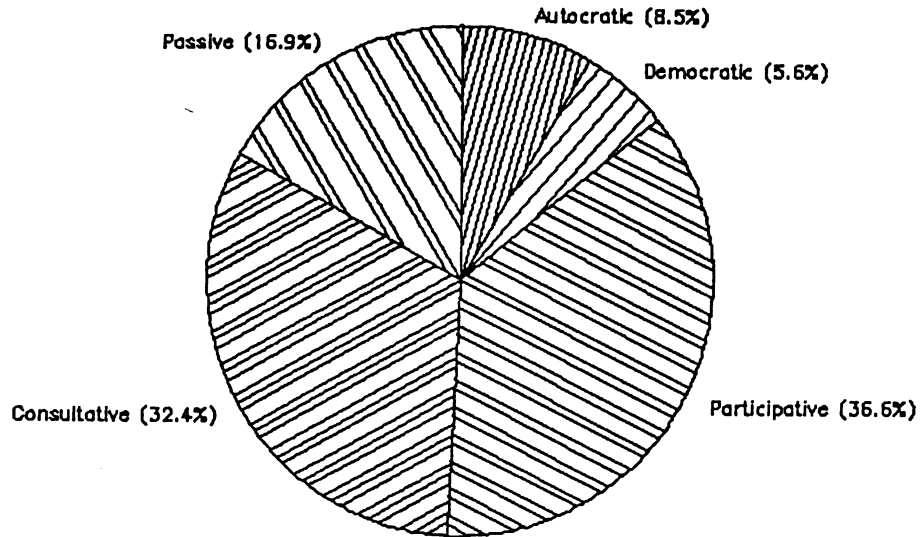


Fig. 4.5 -- Academic Computing Manager (Decentralized)
Management Styles

Academic Computing Manager

The majority of the respondents from the decentralized schools reported their Academic Computing manager practices a "participative" management style (36.6%). This rating was followed closely by 32.4% of responses characterizing this manager as using a "consultative" style. The combined total for these two styles was 69.0%, identical to the combined rating for these two styles for the Data Communication manager but considerably lower than the 83.4% rating for the CIO.

The Academic Computing manager received the highest rating for any manager characterized as using the "passive"

management style (16.9%). The respondents rated with less frequency the "autocratic" style (8.5%) for this manager and "democratic" was reported by 5.6% of the responses.

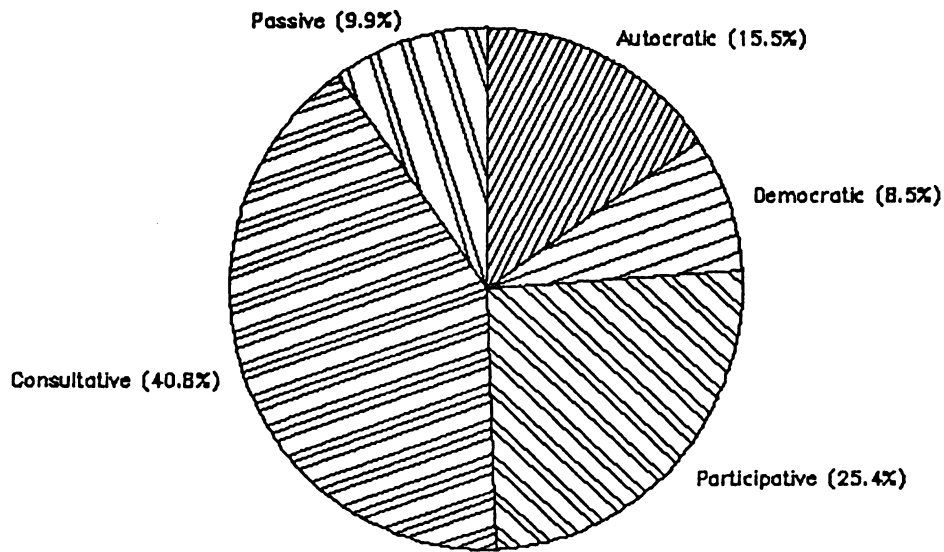


Fig. 4.6 -- Administrative Computing Manager (Decentralized) Management Styles

Administrative Computing Manager

The majority of respondents from the decentralized schools reported their Administrative Computing manager practices a "consultative" style (40.8%). The "participative" style was reported by 25.4% of the respondents for a combined total of 66.2%. This rating was considerably lower than the combined ratings of the CIO (83.4%) for the same two management styles.

The "autocratic" management style was reported by 15.5% of the respondents. The ratings for the "passive" style and "democratic" style was reported at 9.9% and 8.5% respectively.

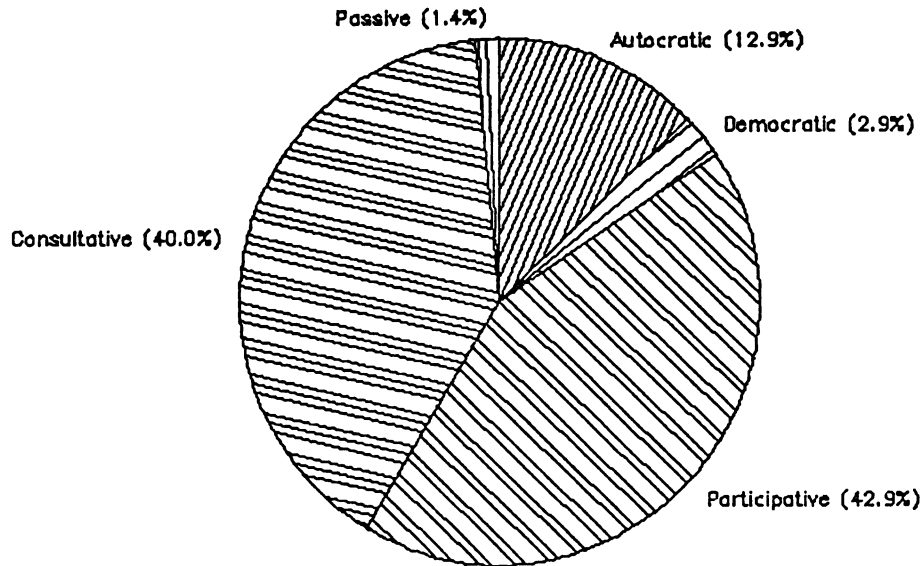


Fig. 4.7 -- Library Automation Manager (Decentralized)
Management Styles

Library Automation Manager

The majority of the respondents from the decentralized schools reported their Library Automation manager practices a "participative" management style (42.9%). This rating was followed very closely by a rating of 40.0% from respondents reporting their manager practices the "consultative" style (40.0%). This combined rating of 82.9% compares very favorable to the CIO's rating of 83.4% for the same two management styles. This rating was also the highest combined rating for any of the decentralized managers.

The "autocratic" management style was reported by 12.9% of the respondents for this manager. The ratings for the "democratic" style (2.9%) and the "passive" style (1.4%) was

the lowest combined rating (4.3%) for any of the decentralized managers and only slightly higher than the combined rating for the CIO (1.4%) for the same two management styles.

Research Question II

Which management organization, if any, produced the highest level of satisfaction in providing voice, data, and video communication; academic and administrative computing; and library automation?

Respondents recorded their responses on a five point Likert type scale for this question according to the following key:

- 1 - Not Satisfied
- 2 - Somewhat Satisfied
- 3 - Satisfied
- 4 - Mostly Satisfied
- 5 - Very Satisfied

The test of the five levels of satisfaction related to the service provided produced a Wilks' lambda of .93677, an F-value of 1.24873, and a p-value of .287. No significance was found in this research question.

The results are shown in tabular form in Appendix I, Table I.2. The survey results are also depicted graphically in the bar charts shown on the following pages.

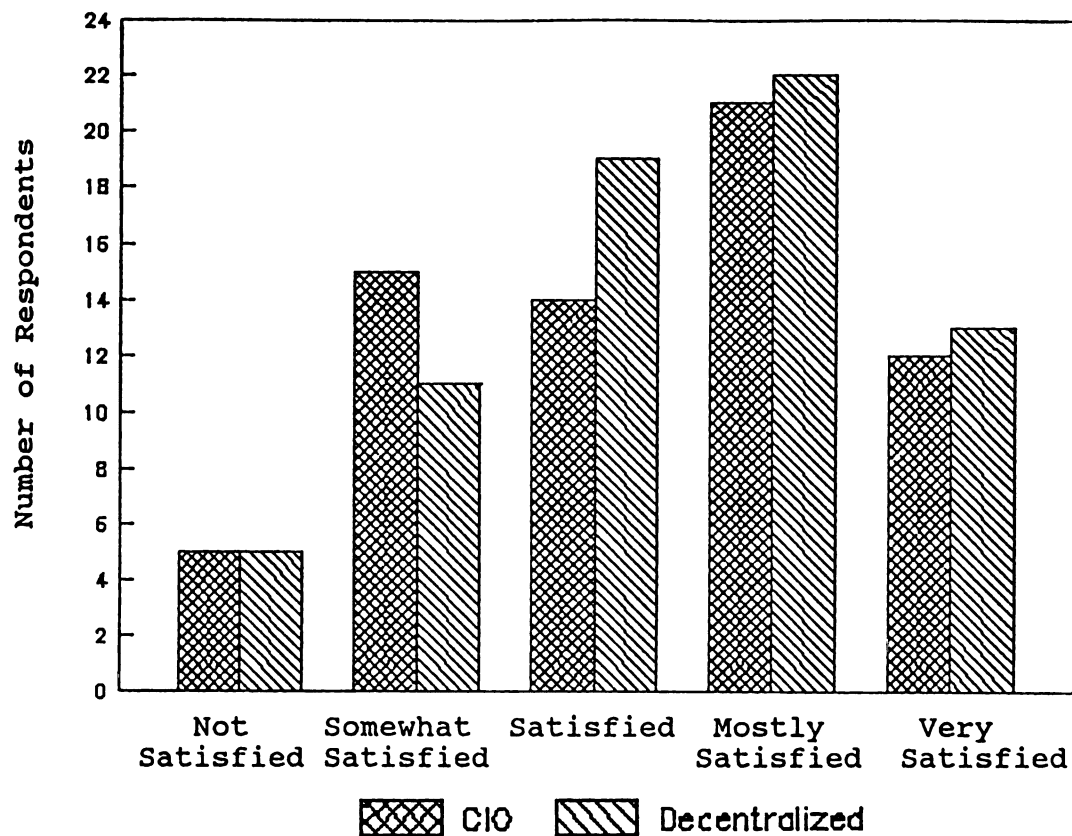


Fig. 4.8 -- Highest Satisfaction in Providing Voice Communication

Satisfaction with Voice Communication Service

The decentralized Voice Communication managers received higher ratings than the CIO in providing this service in the categories of "very satisfied," "mostly satisfied," and "satisfied." The CIO received higher ratings in the "somewhat satisfied" category. The CIO and decentralized managers received an equal number of responses in the "not satisfied" category.

The average rating of user satisfaction with Voice Communication service was 3.3 for the CIO and 3.4 for the decentralized manager.

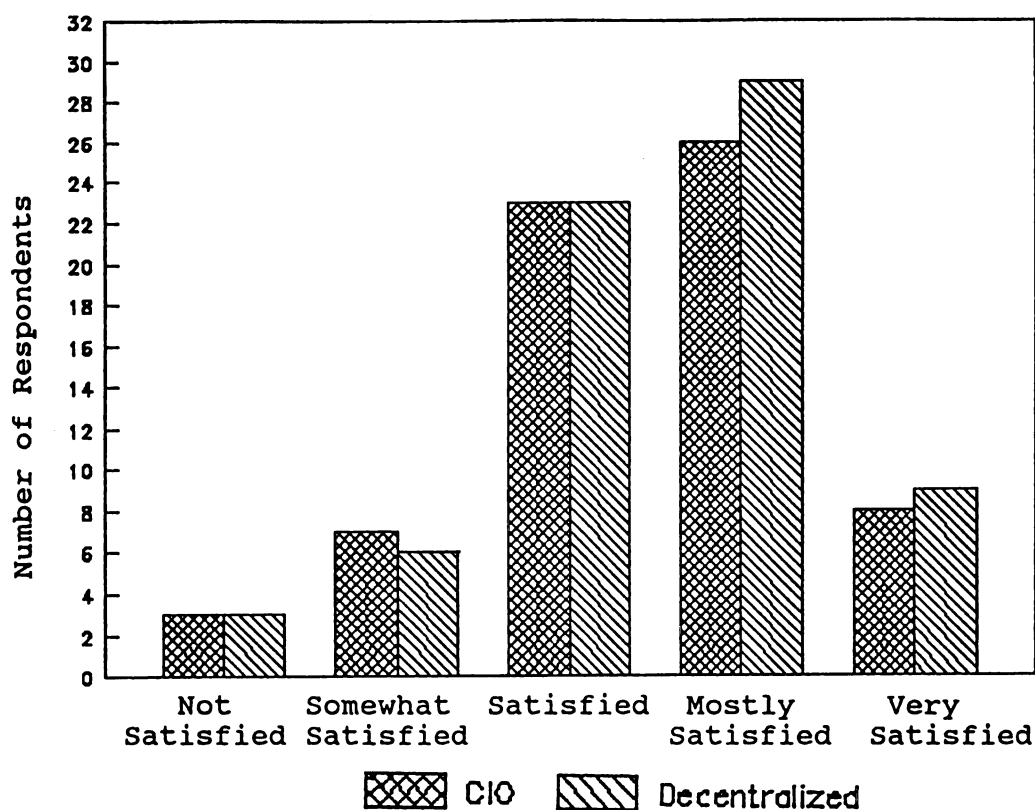


Fig. 4.9 -- Highest Satisfaction in Providing Data Communication

Satisfaction with Data Communication Service

The decentralized Data Communication managers received higher ratings than the CIO in providing this service in the categories of "very satisfied" and "mostly satisfied." The CIO received higher ratings in the "somewhat satisfied" category. The CIO and the decentralized manager received an equal number of responses in the categories of "satisfied" and "not satisfied."

The average rating of user satisfaction with Data Communication service was 3.4 for the CIO and 3.5 for the decentralized manager.

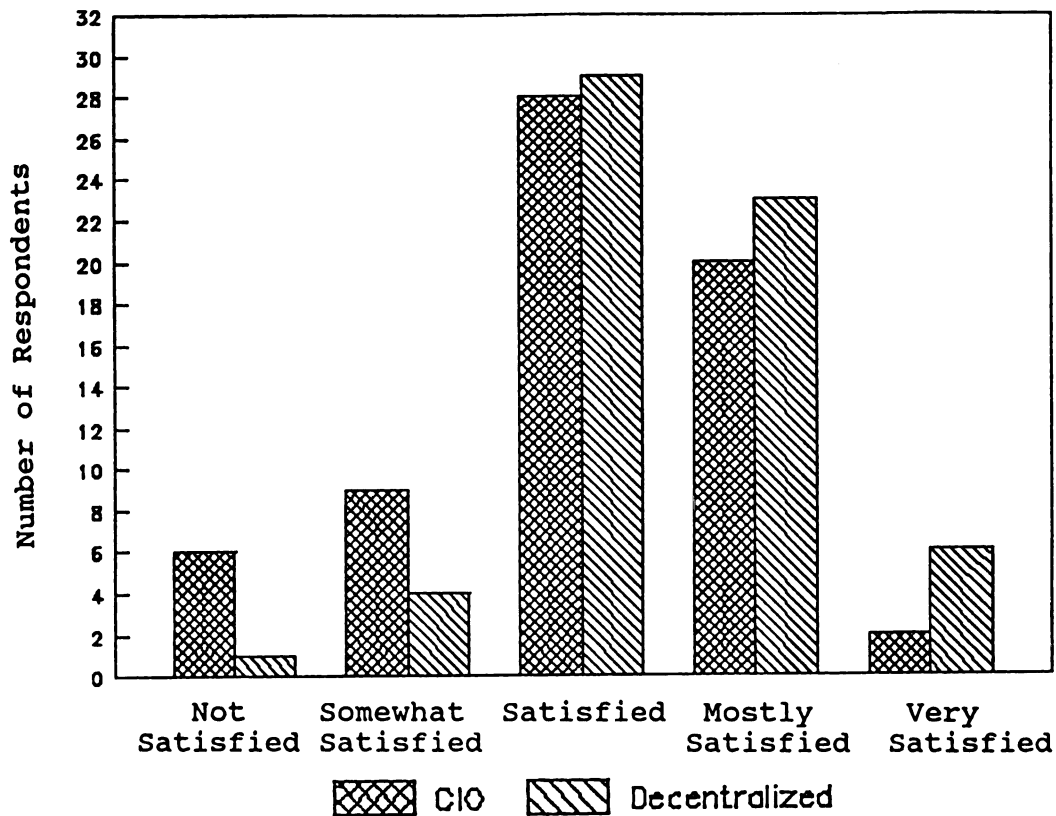


Fig. 4.10 -- Highest Satisfaction in Providing Video Communication

Satisfaction with Video Communication Service

The decentralized Video Communication managers received higher ratings in providing this service than the CIO in the categories of "very satisfied," "mostly satisfied," and "satisfied." The CIO received higher ratings than the decentralized manager in the categories of "somewhat satisfied" and "not satisfied."

The average rating of user satisfaction with Video Communication service was 3.0 for the CIO and 3.5 for the decentralized managers.

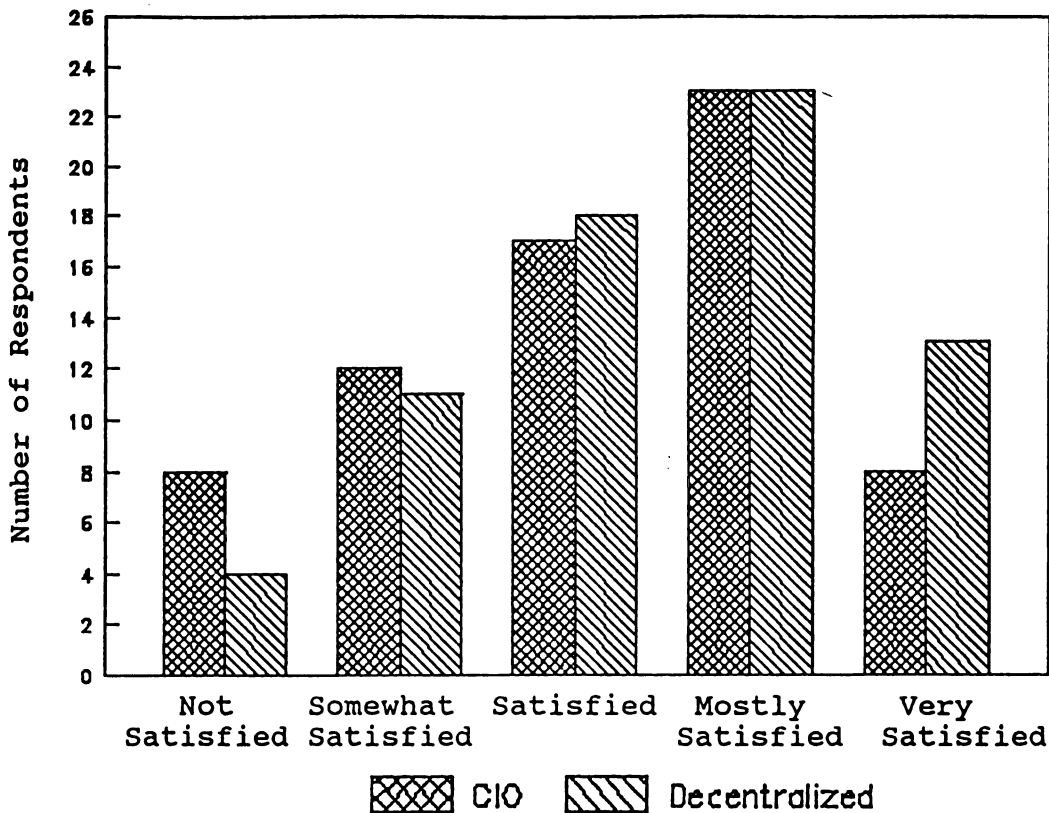


Fig. 4.11 -- Highest Satisfaction in Providing Academic Computing

Satisfaction with Academic Computing Service

The decentralized Academic Computing managers received higher ratings than the CIO in providing this service in the categories of "very satisfied" and "satisfied." The CIO and the decentralized manager received an equal number of responses in the "mostly satisfied" category. The CIO received higher ratings in the "somewhat satisfied" and "not satisfied" categories.

The average rating of user satisfaction with Academic Computing service was 3.1 for the CIO and 3.4 for the decentralized managers.

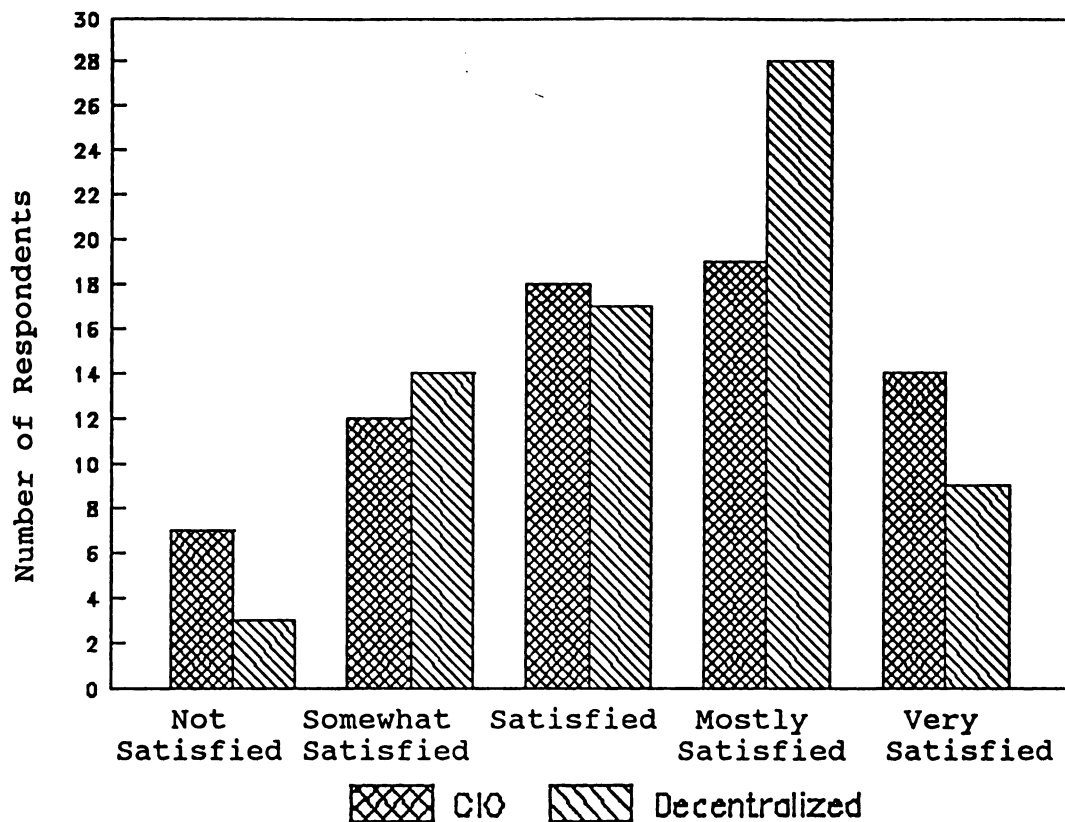


Fig. 4.12 -- Highest Satisfaction in Providing Administrative Computing

Satisfaction with Administrative Computing Service

The decentralized managers of Administrative Computing received higher ratings than the CIO in the categories of "mostly satisfied" and "somewhat satisfied." The CIO received higher ratings in the categories of "very satisfied," "satisfied," and "not satisfied."

The average rating of user satisfaction with Administrative Computing service was 3.3 for the CIO and 3.4 for the decentralized managers.

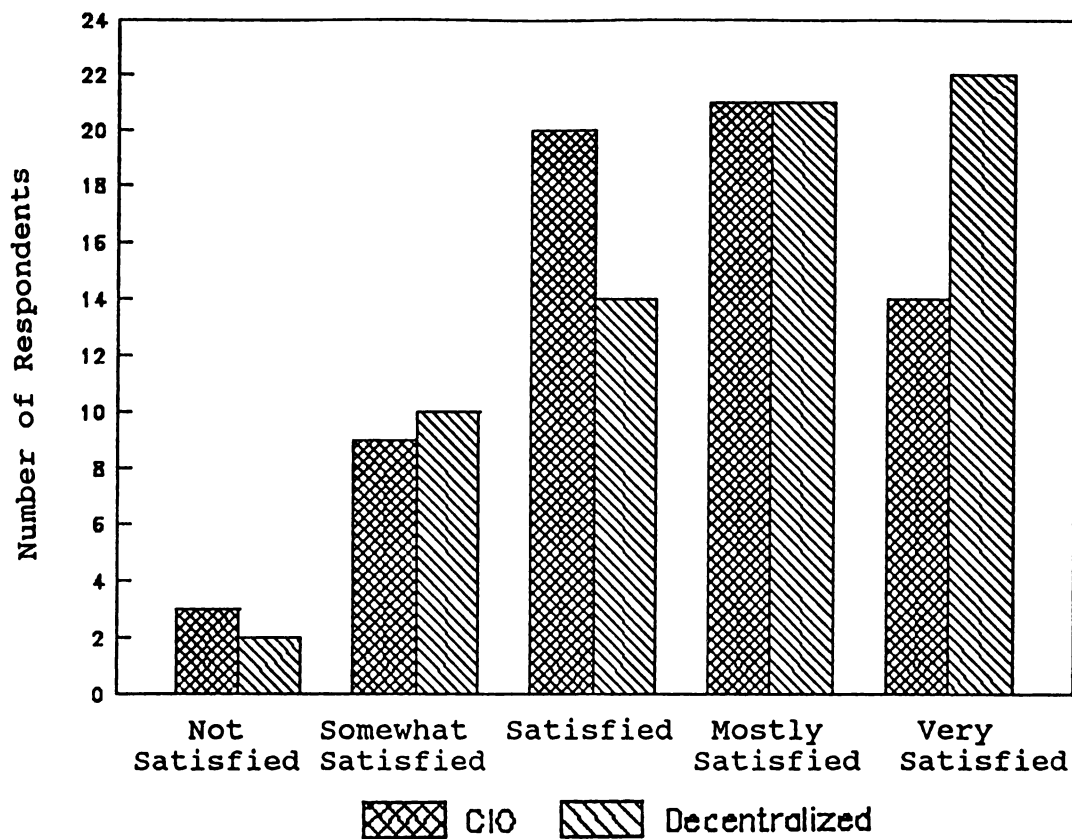


Fig. 4.13 -- Highest Satisfaction in Providing Library Automation

Satisfaction with Library Automation Service

The decentralized Library Automation managers received higher ratings than the CIO in providing this service in the categories of "very satisfied" and "somewhat satisfied."

The CIO received higher ratings in the categories of "satisfied" and "not satisfied." The CIO and decentralized managers received an equal number of responses in the "mostly satisfied" category.

The average rating of user satisfaction with Library Automation service was 3.5 for the CIO and 3.7 for the decentralized manager.

Most Satisfactory Service Provided

Respondents were asked to select which function they were the most satisfied with in the service provided. The survey results are shown in tabular form in Appendix I, Table I.3. The results are also depicted graphically in the bar chart shown on the following page.

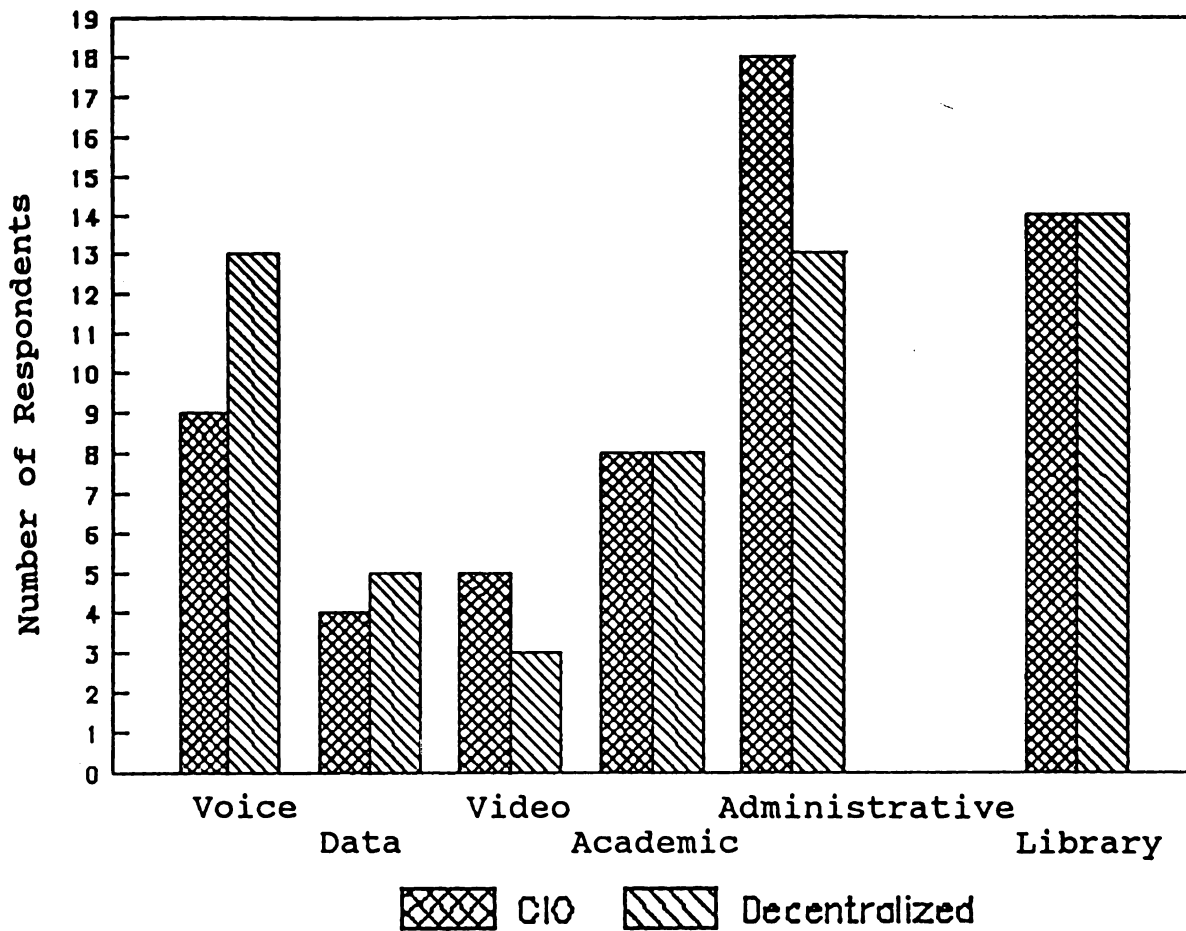


Fig. 4.14 -- Most Satisfactory Service Provided

The CIO received a higher number of responses than the decentralized managers in providing "most satisfactory" service for Administrative Computing and Video Communication. The decentralized managers received higher ratings in Voice and Data Communication. An equal number of responses were recorded for the CIO and decentralized managers in the service provided for Academic Computing and Library Automation.

Least Satisfactory Service Provided

Respondents were also asked which function they were least satisfied with in the service provided. The survey results are shown in tabular form in Appendix I, Table I.4. The results are also depicted graphically in the bar chart shown on the following page.

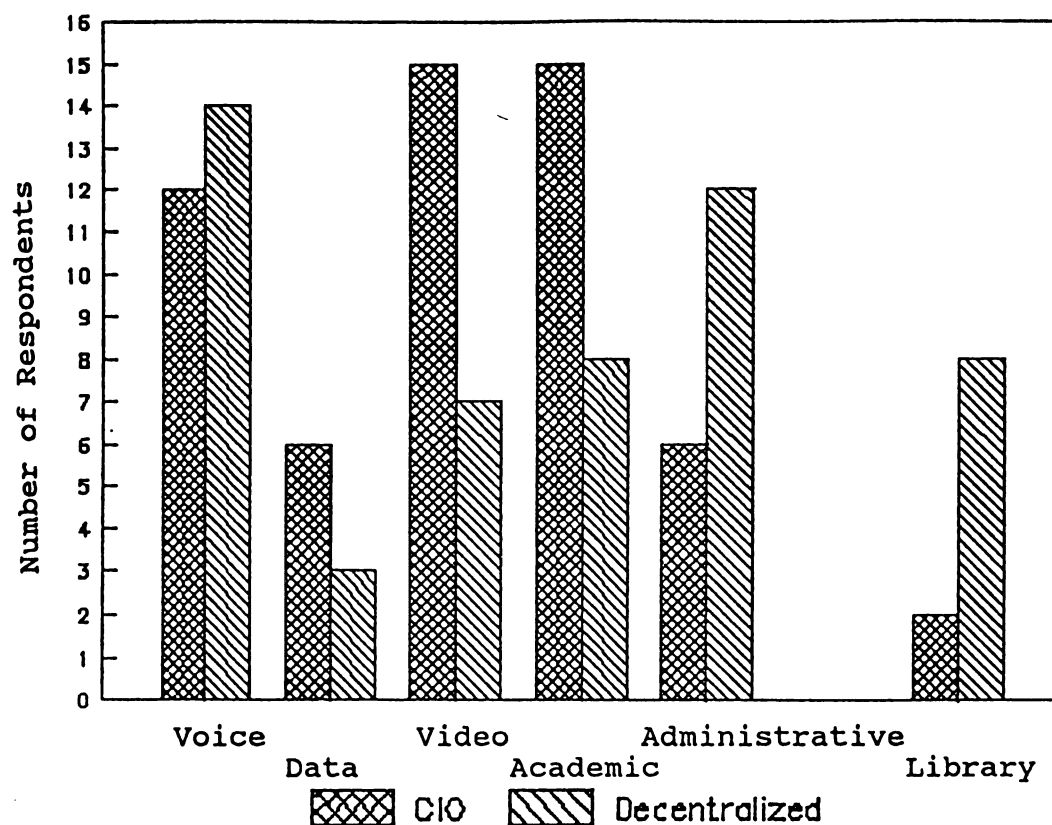


Fig. 4.15 -- Least Satisfactory Service Provided

The CIO received a higher number of responses than the decentralized managers in providing "least satisfactory" service for Data and Video Communication and Academic Computing. The decentralized managers received higher ratings in Voice Communication, Administrative Computing, and Library Automation.

Research Question III

Which management organization, if any, produced the highest level of satisfaction in providing current and future budget planning for voice, data, and video communication; academic and administrative computing; and library automation?

Respondents recorded their responses on a five point Likert type scale for this question according to the following key:

- 1 - Not Satisfied
- 2 - Somewhat Satisfied
- 3 - Satisfied
- 4 - Mostly Satisfied
- 5 - Very Satisfied

The test of the five levels of satisfaction related to current and future budget planning produced a Wilks' lambda of .97628, an F-value of .43336, and a p-value of .855. No significance was found in this research question. The results are shown in tabular form in Appendix I, Table I.5. The survey results are also depicted graphically in the bar charts shown on the following pages.

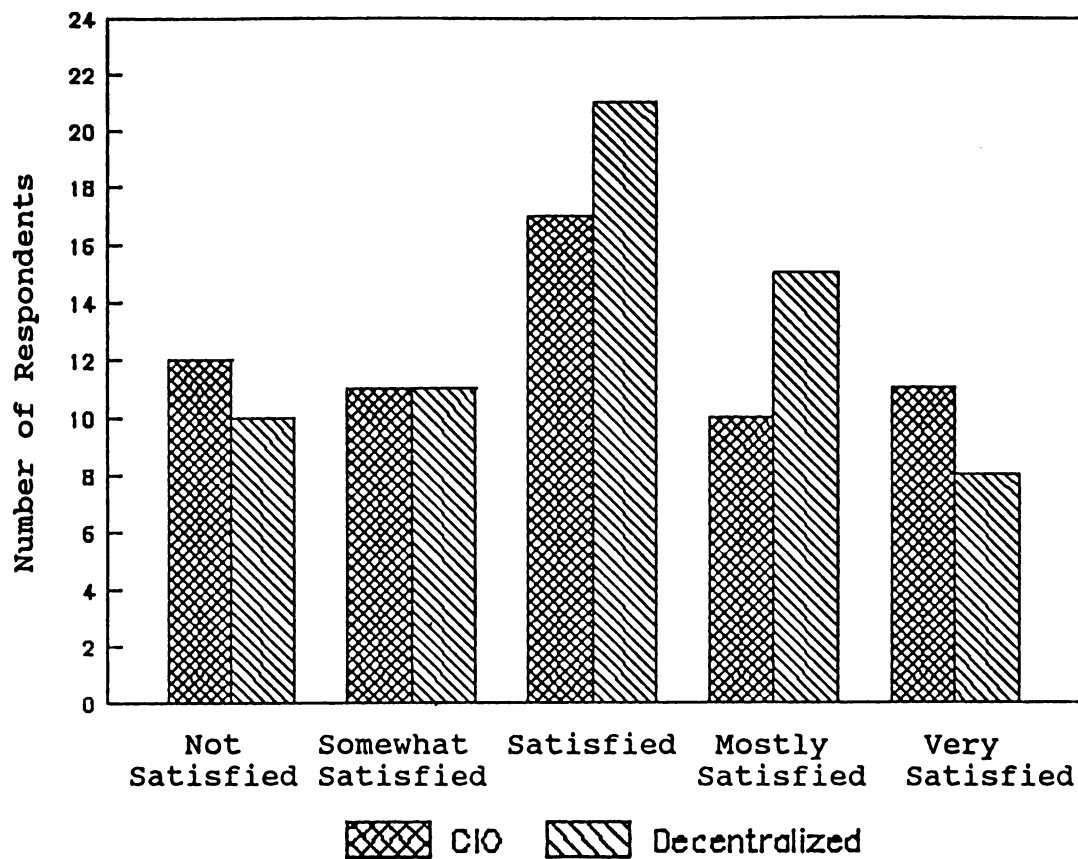


Fig. 4.16 -- Voice Communication - Level of Satisfaction with Budget Planning

Budget Planning for Voice Communication

The decentralized Voice Communication managers received higher ratings in the categories of "mostly satisfied" and "satisfied" than the CIO for their efforts in budget planning. The CIO received higher ratings in the categories of "very satisfied" and "not satisfied." An equal number of responses was reported for the CIO and decentralized managers in the "somewhat satisfied" category.

The average rating of user satisfaction with budget planning for Voice Communication was 2.9 for the CIO and 3.0 for the decentralized managers.

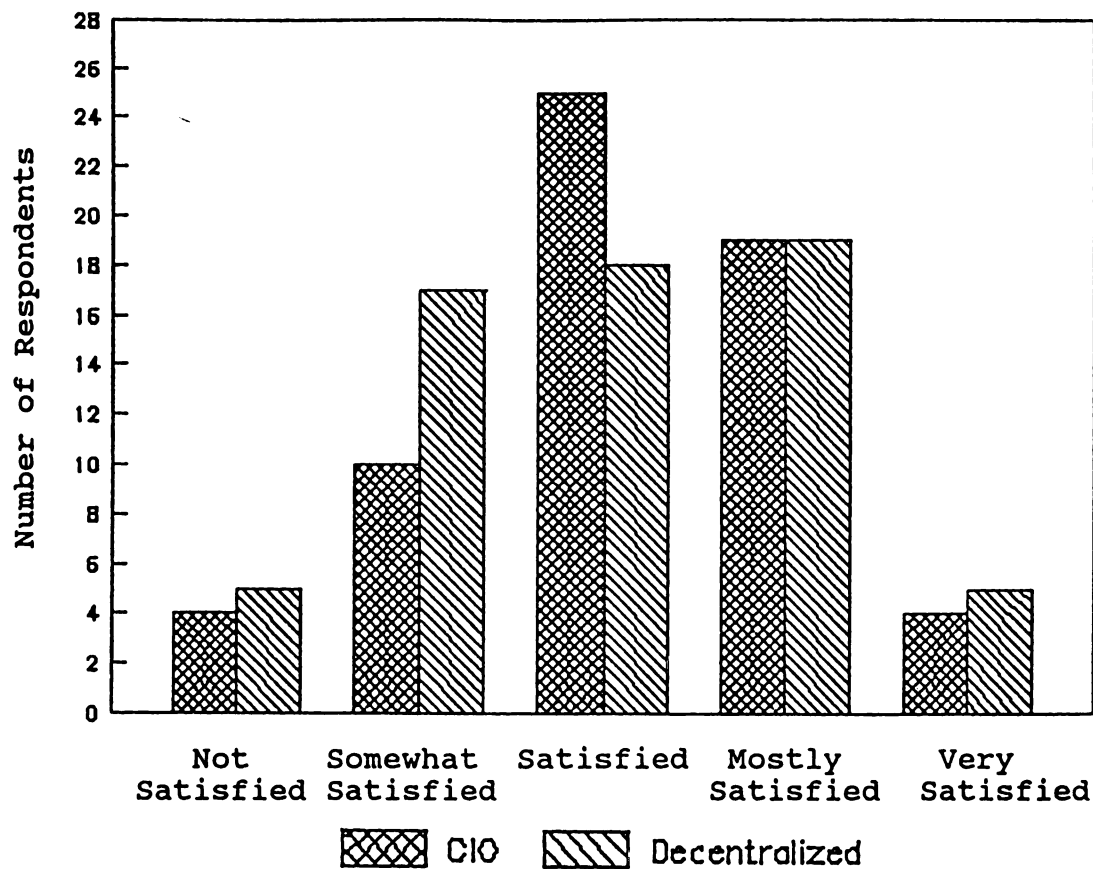


Fig. 4.17 -- Data Communication - Level of Satisfaction with Budget Planning

Budget Planning for Data Communication

The decentralized Data Communication managers received higher ratings than the CIO in budget planning in the categories of "very satisfied," "somewhat satisfied," and "not satisfied." The CIO received higher ratings in the "satisfied" category and an equal number of responses was received for both in the "mostly satisfied" category.

The average rating of user satisfaction with budget planning for Data Communication was 3.1 for the CIO and 3.0 for the decentralized managers.

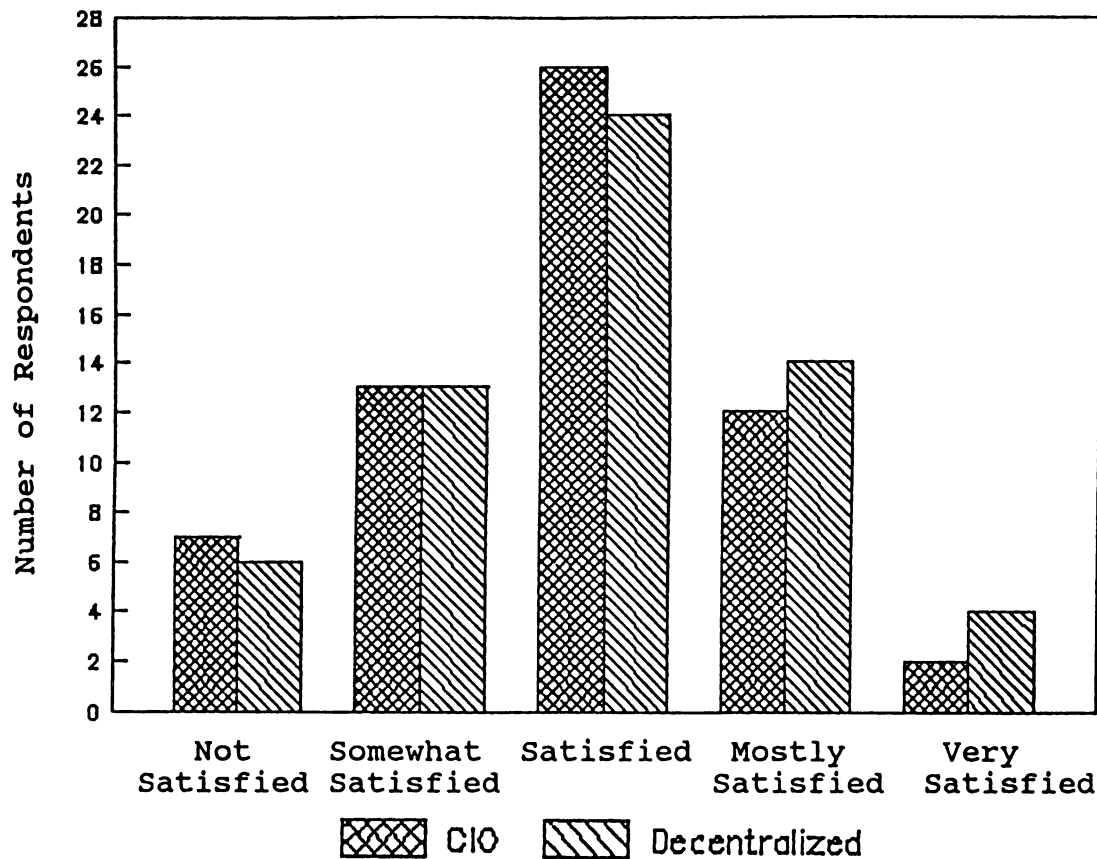


Fig. 4.18 -- Video Communication - Level of Satisfaction with Budget Planning

Budget Planning for Video Communication

The decentralized Video Communication managers received higher ratings than the CIO in budget planning in the categories of "very satisfied" and "mostly satisfied." The CIO received higher ratings in the "satisfied" and "not satisfied" categories. An equal number of responses were received for the CIO and decentralized managers in the "somewhat satisfied" category.

The average rating of user satisfaction with budget planning for Video Communication was 2.8 for the CIO and 2.9 for the decentralized managers.

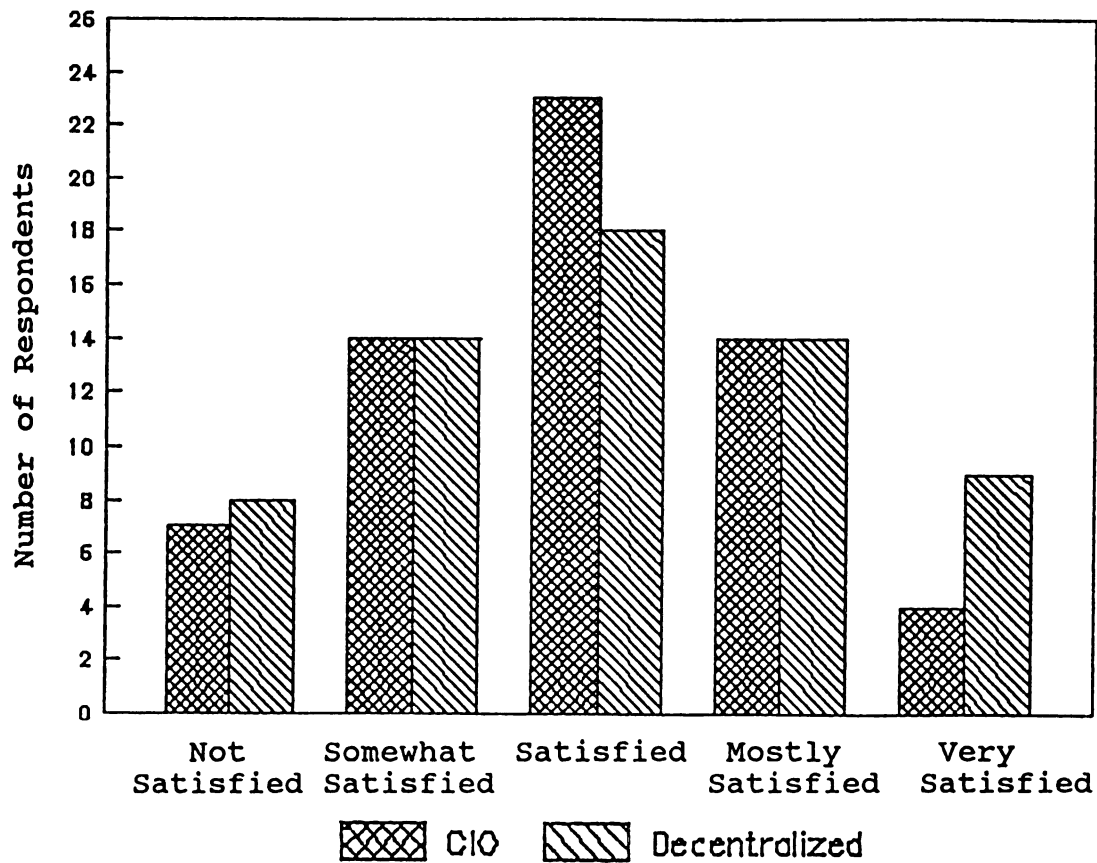


Fig. 4.19 -- Academic Computing - Level of Satisfaction with Budget Planning

Budget Planning for Academic Computing

The decentralized managers of Academic Computing received higher ratings than the CIO for budget planning in the categories of "very satisfied" and "not satisfied." The CIO received higher ratings in the "satisfied" category. An equal number of responses was received for the CIO and decentralized managers in the categories of "mostly satisfied" and "somewhat satisfied."

The average rating of user satisfaction with budget planning for Academic Computing was 2.9 for the CIO and 3.0 for the decentralized managers.

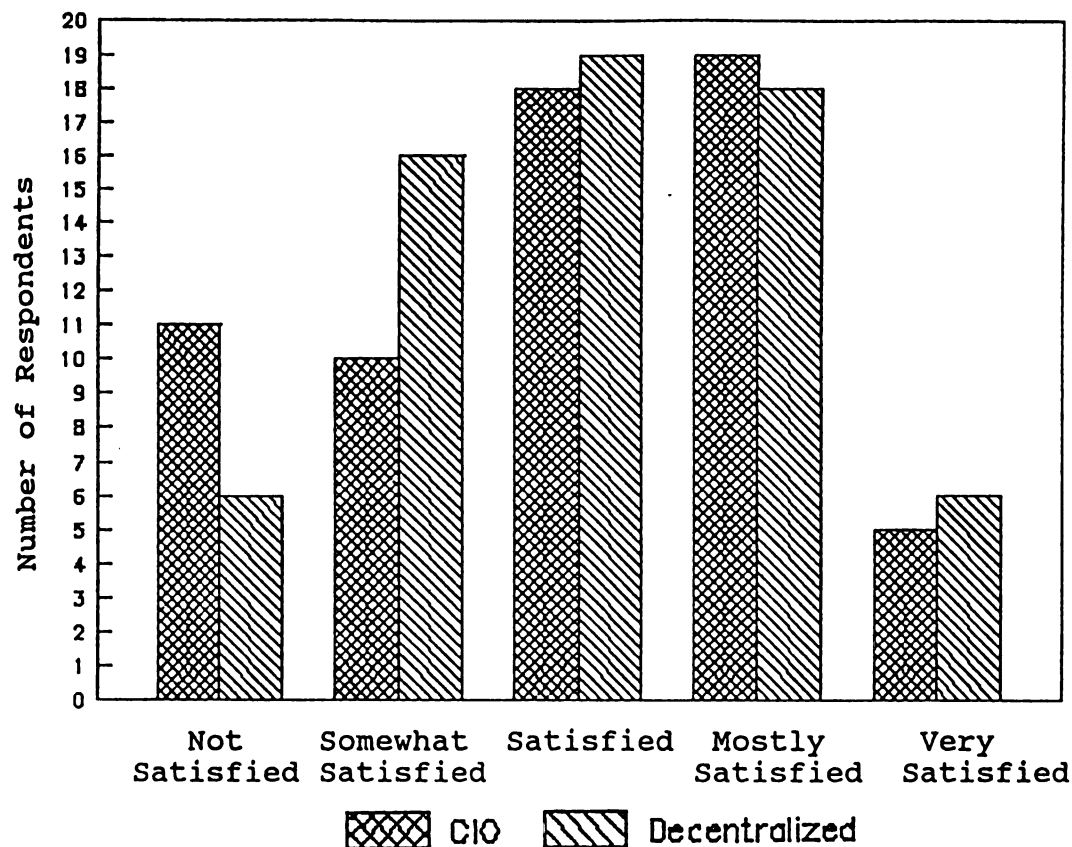


Fig. 4.20 -- Administrative Computing - Level of Satisfaction with Budget Planning

Budget Planning for Administrative Computing

The decentralized managers of Administrative Computing received higher ratings than the CIO for budget planning in the categories of "very satisfied," "satisfied" and "somewhat satisfied." The CIO received higher ratings in the categories of "mostly satisfied" and "not satisfied."

The average rating of user satisfaction with budget planning for Administrative Computing was 2.9 for the CIO and 3.0 for the decentralized managers.

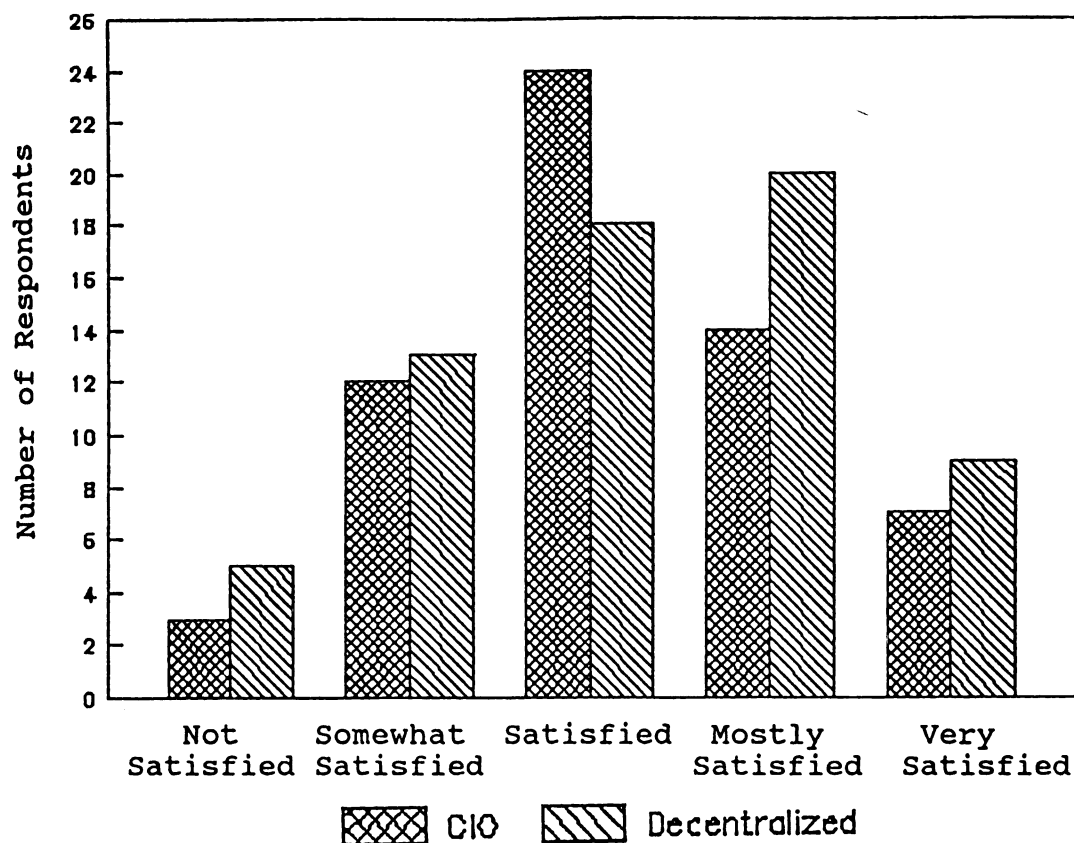


Fig. 4.21 -- Library Automation - Level of Satisfaction with Budget Planning

Budget Planning for Library Automation

The decentralized managers of Library Automation received higher ratings than the CIO for budget planning in all categories except "satisfied."

The average rating of user satisfaction with budget planning for Library Automation was 3.1 for the CIO and 3.2 for the decentralized managers.

Most Satisfactory Budget Planning

Respondents were asked to select which function they were most satisfied with in budget planning. The survey results are shown in tabular form in Appendix I, Table I.6. The results are also depicted graphically in the bar charts shown on the following page.

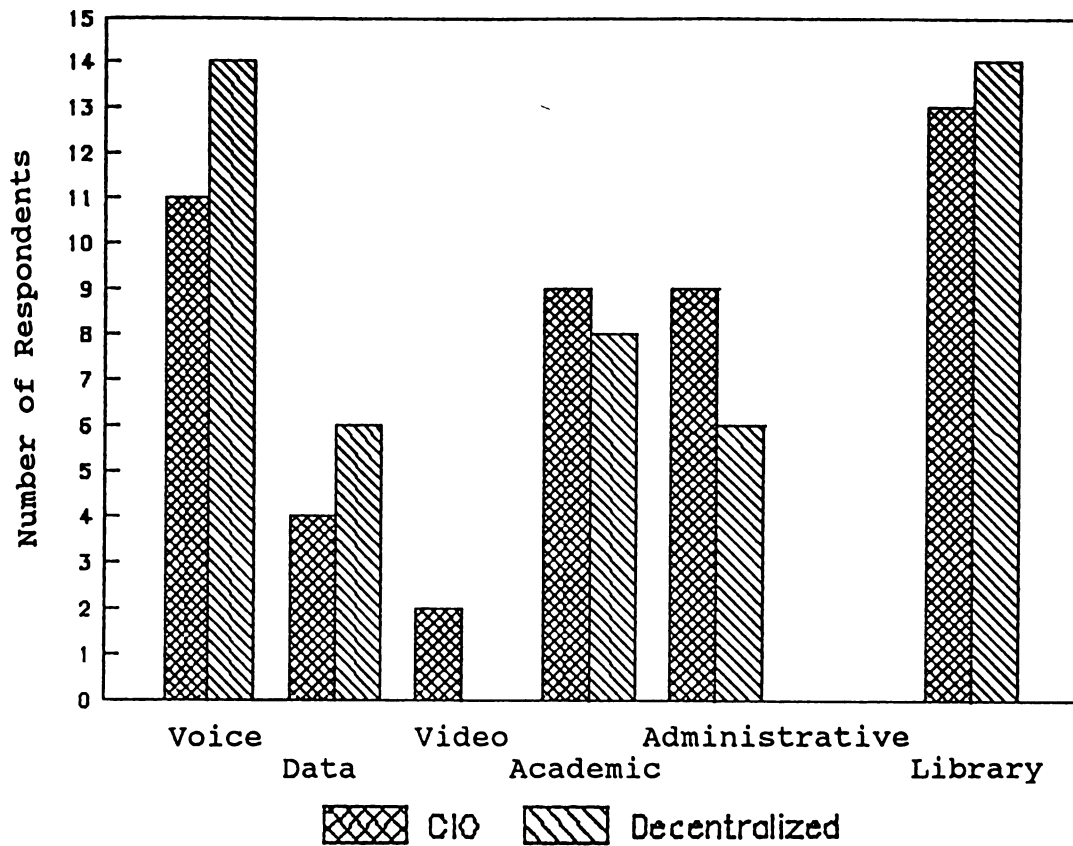


Fig. 4.22 -- Most Satisfactory Budget Planning

The CIOs received a higher number of responses than the decentralized managers for satisfactory budget planning for Video Communication, Academic Computing, and Administrative Computing. The decentralized managers received higher ratings in Voice and Data Communication, and Library Automation.

Least Satisfactory Budget Planning

Respondents were also asked which function they were least satisfied with in the efforts for current and future budget planning. The results are shown in tabular form in Appendix I, Table I.7. The survey results are also depicted graphically in the bar chart shown on the following page.

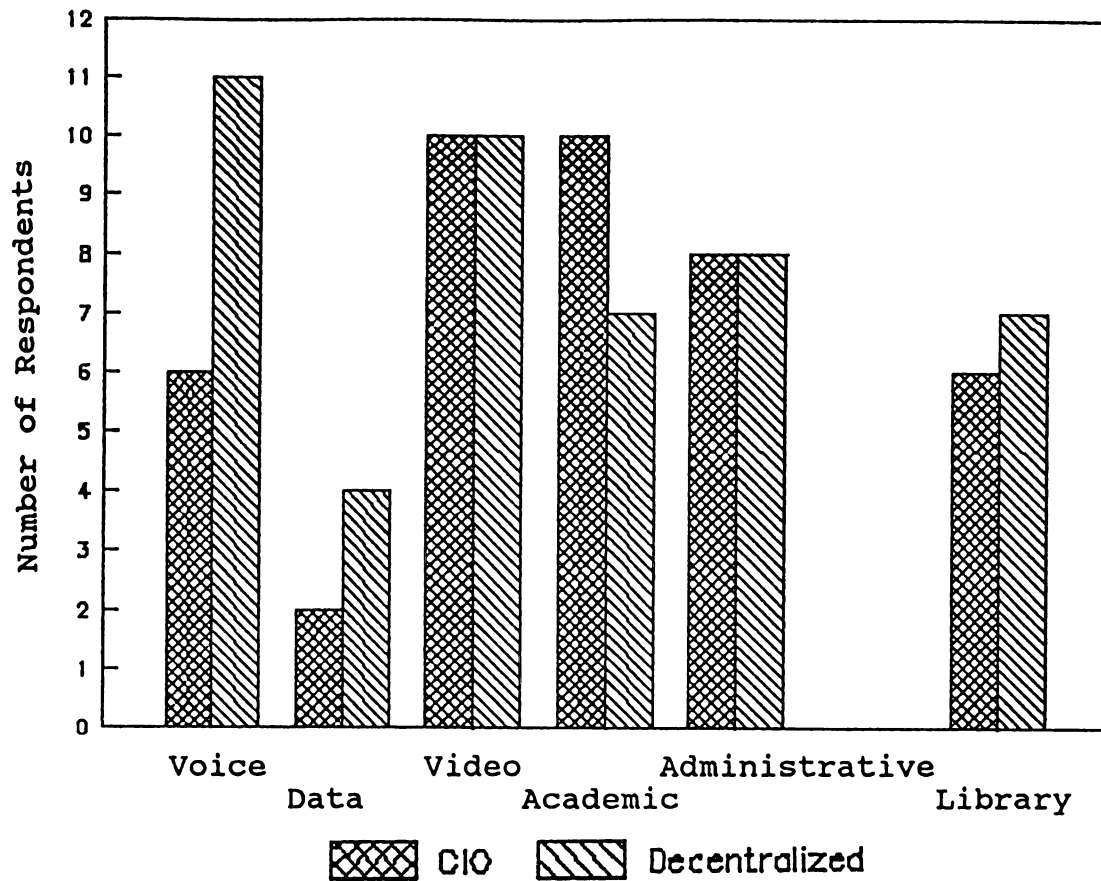


Fig. 4.23 -- Least Satisfactory Budget Planning

The CIOs received a higher number of responses than the decentralized managers for unsatisfactory budget planning for Academic Computing. The decentralized managers received higher ratings in Voice and Data Communication, and Library Automation. Respondents were equally dissatisfied with the CIOs and decentralized managers efforts in budget planning for Video Communication and Administrative Computing.

Research Question IV

Which management organization, if any, produced the highest level of satisfaction in providing access to information resources by student, faculty and staff?

Respondents recorded their responses on a five point Likert type scale for this question according to the following key:

- 1 - Not Satisfied
- 2 - Somewhat Satisfied
- 3 - Satisfied
- 4 - Mostly Satisfied
- 5 - Very Satisfied

The test of the five levels of satisfaction related to access to information resources by students, faculty and staff produced a Wilks' lambda of .99594, an F-value of .18481, and a p-value of .907. No significance was found in this research question. The results are shown in tabular form in Appendix I, Table I.8. The survey results are also depicted graphically in the bar charts shown on the following pages.

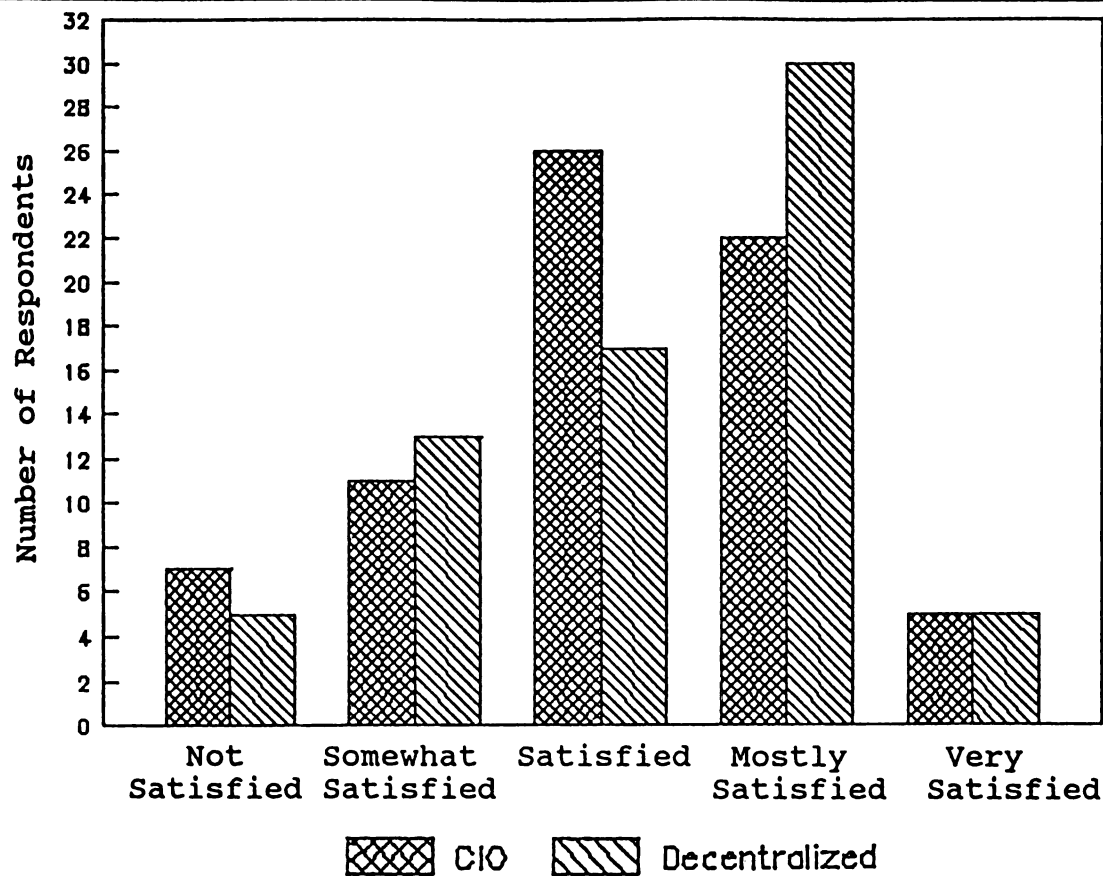


Fig. 4.24 -- Satisfaction with Student Access

Satisfaction with Student Access

The decentralized managers received higher ratings in the categories of "mostly satisfied" and "somewhat satisfied" than the CIO for providing student access to voice, data, and video resources. The CIO received higher ratings in the "satisfied" and "not satisfied" categories. An equal number of responses was received by both in the "very satisfied" category.

The average rating of user satisfaction with student access to voice, data, and video resources was 3.0 for the CIO and 3.2 for the decentralized managers.

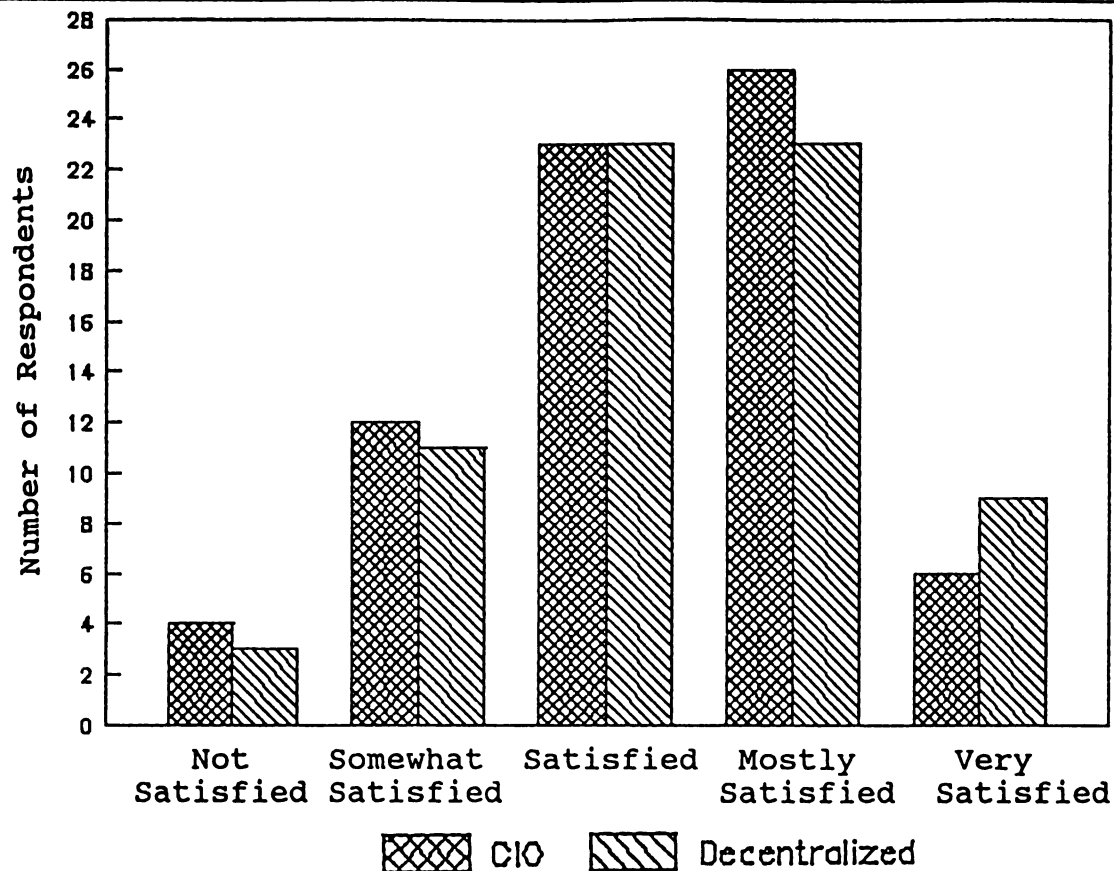


Fig. 4.25 -- Satisfaction with Faculty Access

Satisfaction with Faculty Access

The decentralized managers received a higher rating in the "very satisfied" category than the CIO for providing faculty access to voice, data, and video resources. The CIO received higher ratings in the "mostly satisfied," "somewhat satisfied" and "not satisfied" categories. An equal number of responses was received by both in the "satisfied" category.

The average rating of user satisfaction with faculty access to voice, data, and video resources was 3.2 for the CIO and 3.3 for the decentralized managers.

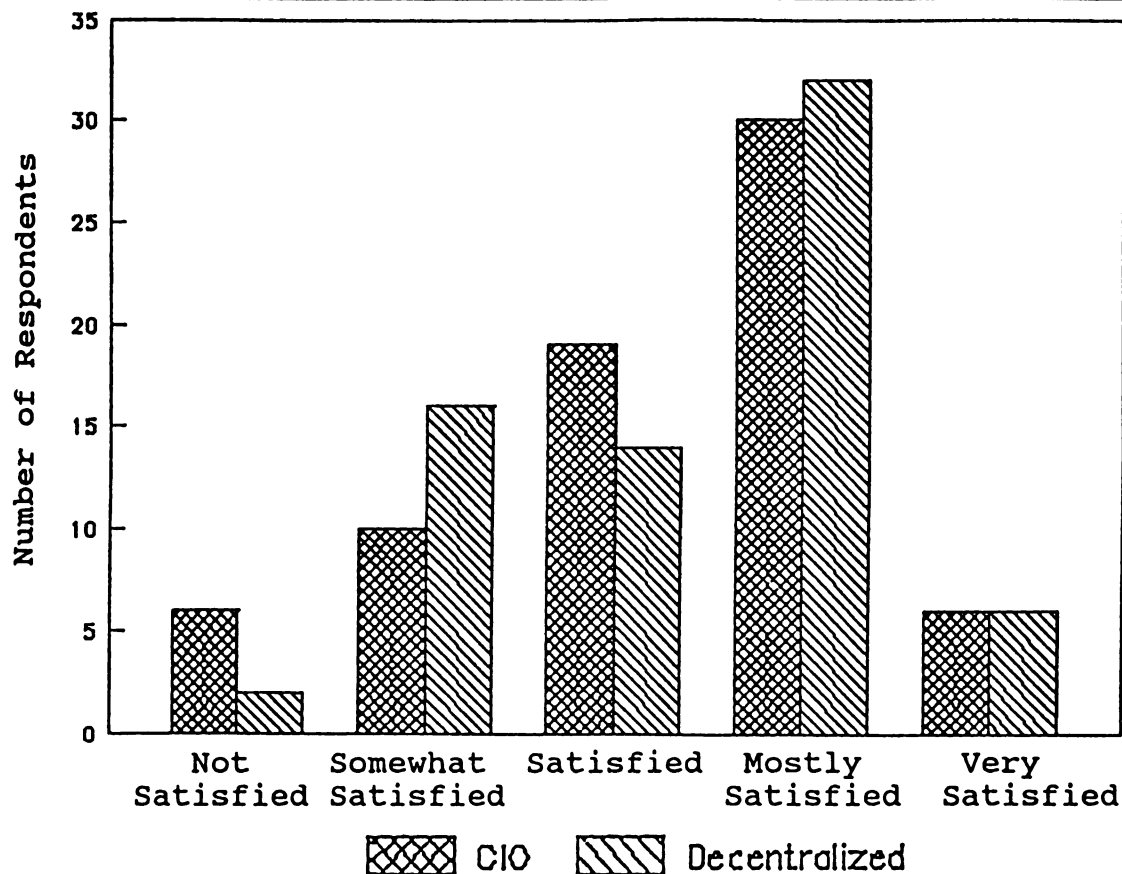


Fig. 4.26 -- Satisfaction with Staff Access

Satisfaction with Staff Access

The decentralized managers received higher ratings in the categories of "mostly satisfied" and "somewhat satisfied." The CIO received the highest ratings in the "satisfied" and "not satisfied" categories. An equal number of responses were recorded for both in the "very satisfied" category.

The average rating of user satisfaction with staff access to voice, data, and video resources was 3.2 for the CIO and 3.3 for the decentralized managers.

Most Satisfactory Access to Voice, Data, and Video Resources

Respondents were asked to select with which they were most satisfied with: access by students or faculty or staff.

The survey results are shown in Appendix I, Table I.9. The results are also depicted graphically in the bar chart shown on the following page.

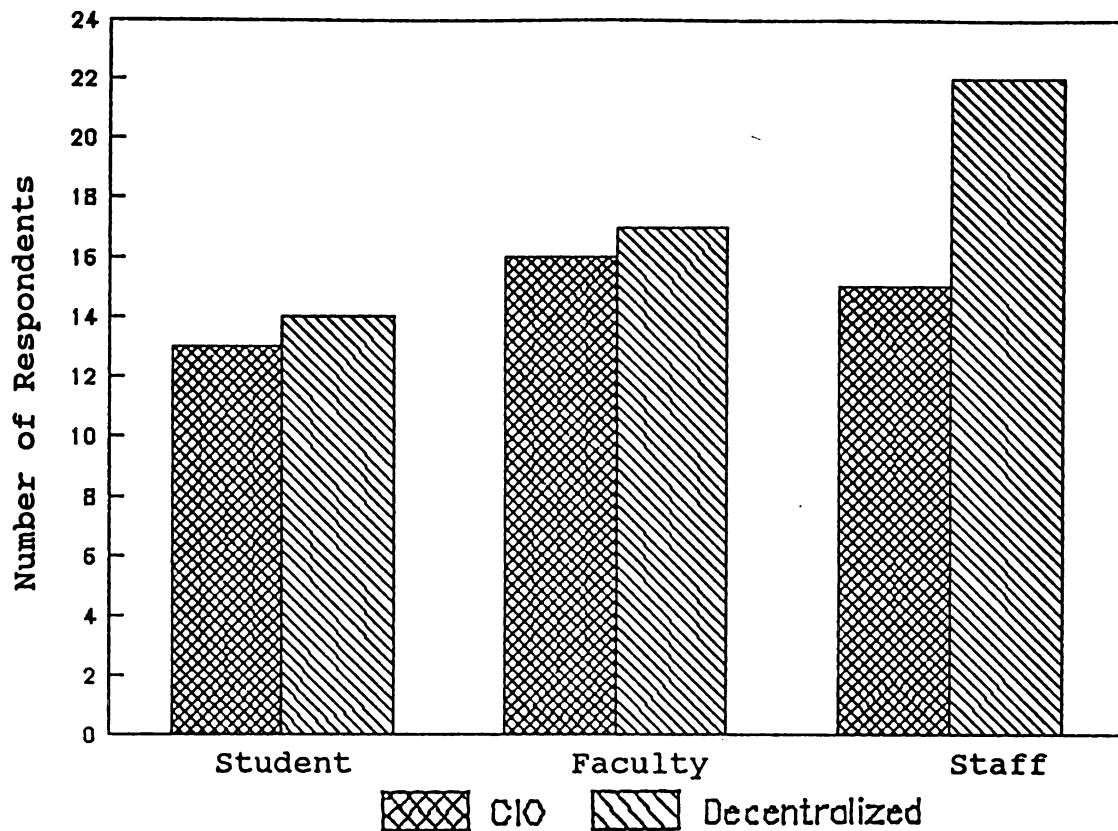


Fig. 4.27 -- Most Satisfactory Access

Most Satisfactory Access

Respondents reported their most satisfaction with the access by student, faculty and staff to voice, data and video resources provided by the decentralized managers.

**Least Satisfactory Access to Voice, Data, and Video
Resources**

Respondents were also asked to select which they were most dissatisfied with: access by students or faculty or staff. The survey results are shown in tabular form in Appendix I, Table 4.10. The results are also depicted graphically in the bar chart shown on the following page.

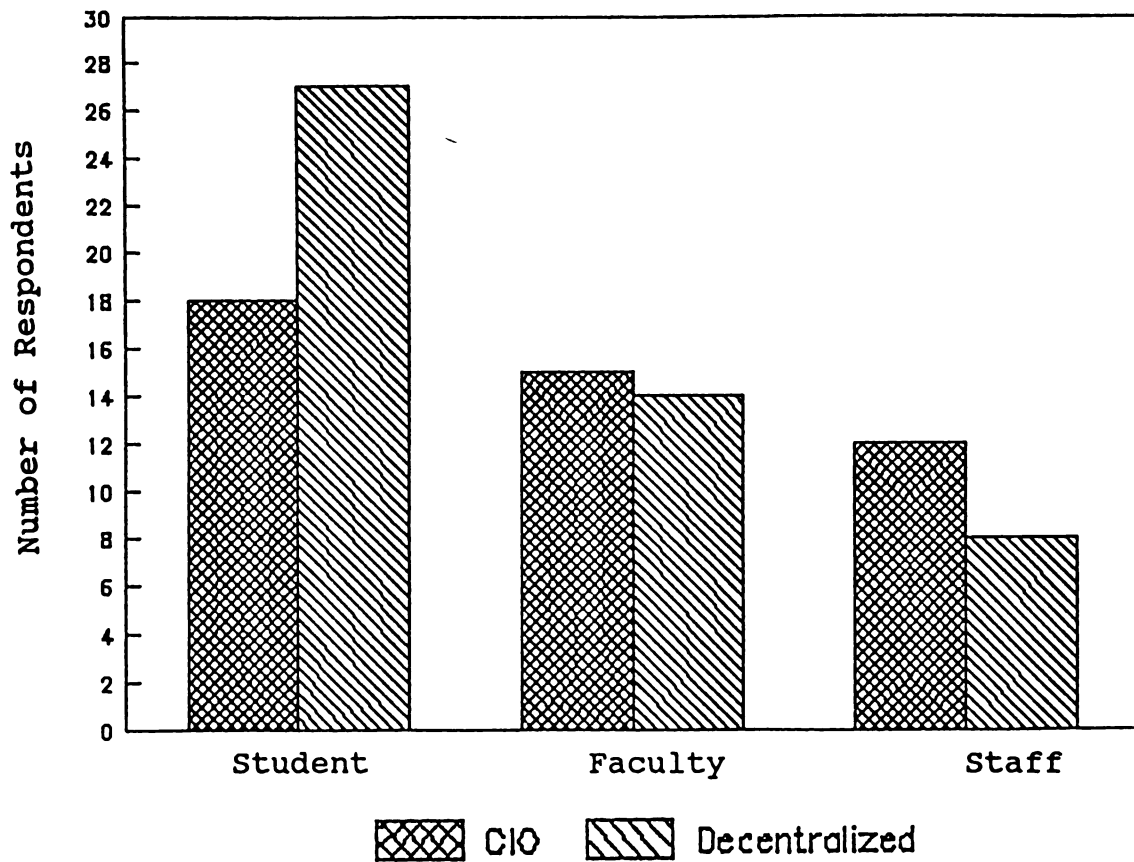


Fig. 4.28 -- Least Satisfactory Access

Least Satisfactory Access

Respondents reported their highest level of dissatisfaction with the access by students to voice, data and video resources that were provided by the decentralized managers. The highest level of dissatisfaction with access to the same resources by faculty and staff was reported for the CIO.

Research Question V

Which management organization, if any, produced the highest level of satisfaction in providing staff recruiting and development of personnel in the areas of voice, data, and video communication as well as academic and administrative computing?

Respondents recorded their responses on a five point Likert type scale for this question according to the following key:

- 1 - Not Satisfied
- 2 - Somewhat Satisfied
- 3 - Satisfied
- 4 - Mostly Satisfied
- 5 - Very Satisfied

The test of the five levels of satisfaction related to staff recruiting and development of personnel produced a Wilks' lambda of .92193, an F-value of 1.31249, and a p-value of .259. No significance was found in this research question. The results are shown in tabular form in Appendix I, Table I.11. The survey results are also depicted graphically in the bar charts shown on the following pages.

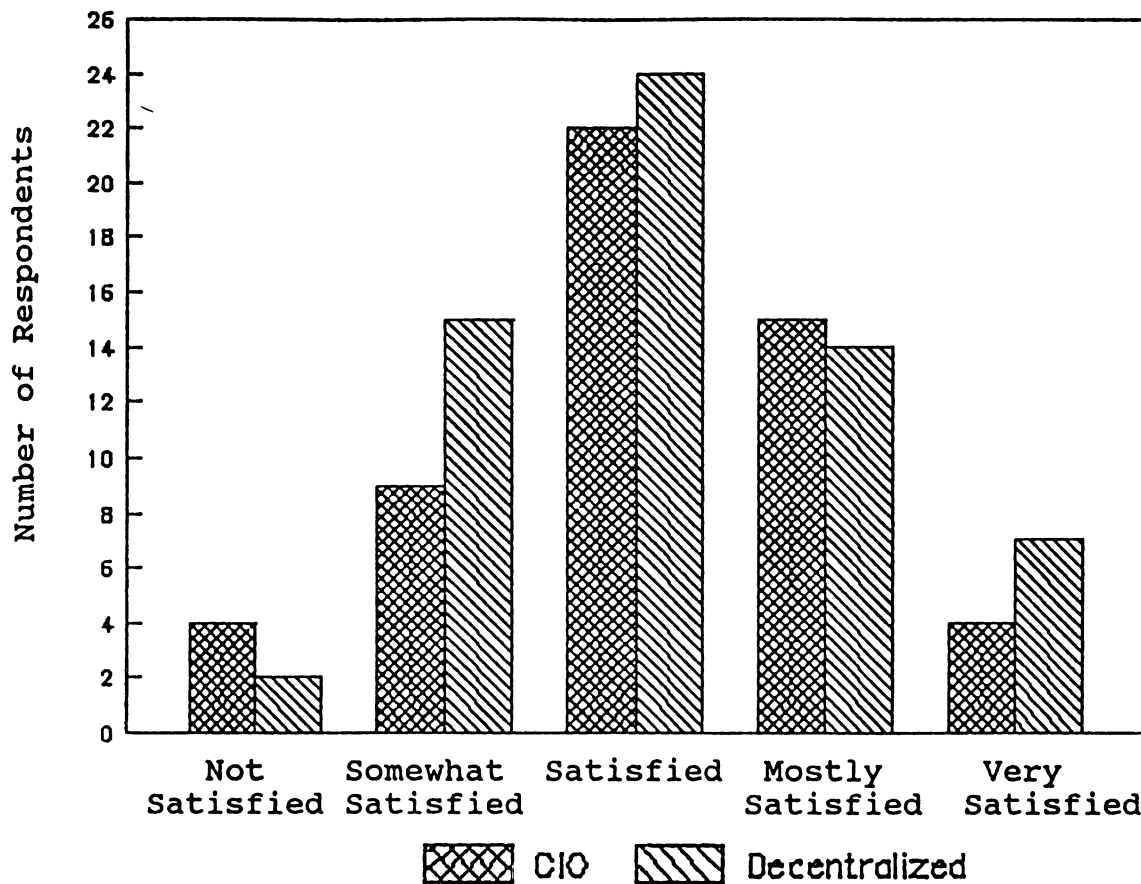


Fig. 4.29 -- Voice Communication - Satisfaction
with Staff Recruitment and Development

Voice Communication

Respondents reported higher ratings for the decentralized Voice Communication managers for their efforts in staff recruitment and development than for the CIO in the categories of "very satisfied," "satisfied," and "somewhat satisfied." The CIO received higher ratings in the "mostly satisfied" and "not satisfied" categories.

The average rating of user satisfaction with staff recruitment and development for Voice Communication was 3.1 for both the CIO and the decentralized managers.

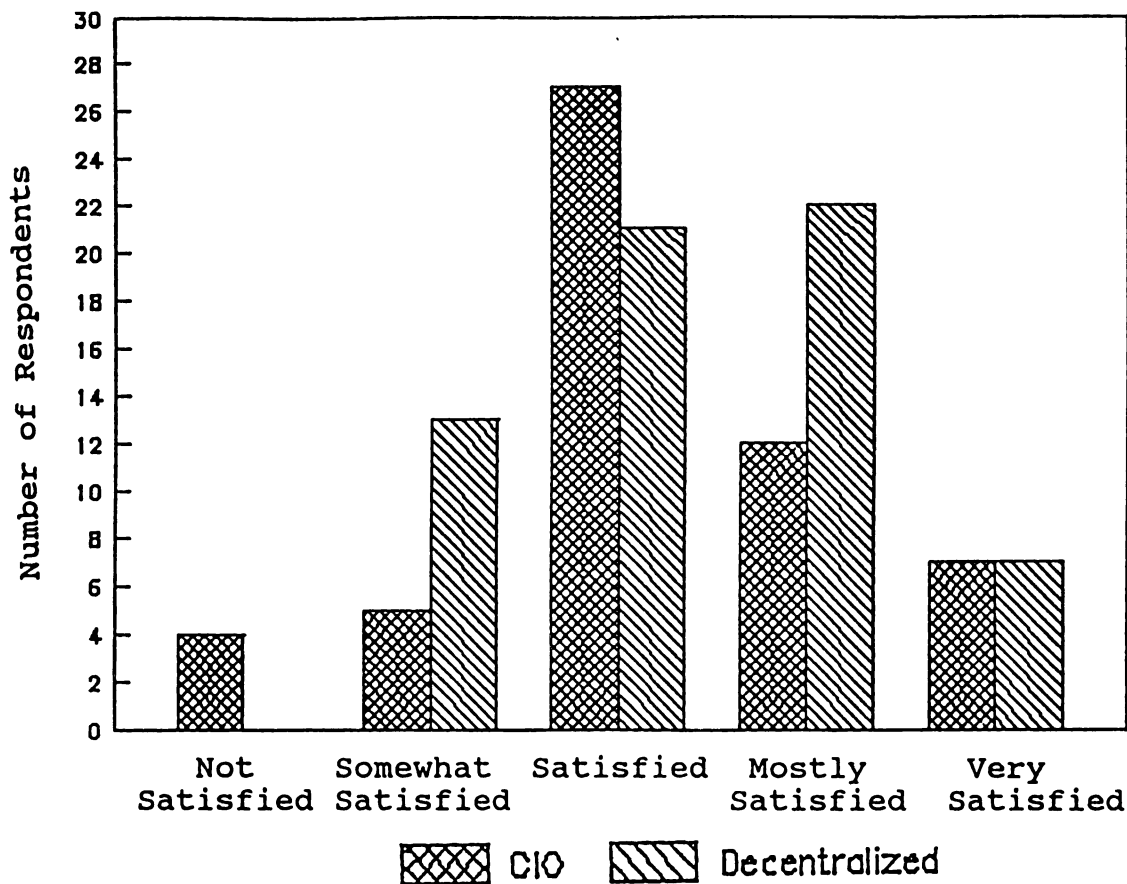


Fig. 4.30 -- Data Communication - Satisfaction
with Staff Recruitment and Development

Data Communication

Respondents reported higher ratings for the decentralized Data Communication managers for their efforts in staff recruitment and development than for the CIO in the categories of "mostly satisfied" and "somewhat satisfied." The CIO received higher ratings in the "satisfied" and "not satisfied" categories. An equal number of responses was received for each in the "very satisfied" category.

The average rating of user satisfaction with staff recruitment and development for Data Communication was 3.2 for the CIO and 3.3 for the decentralized managers.

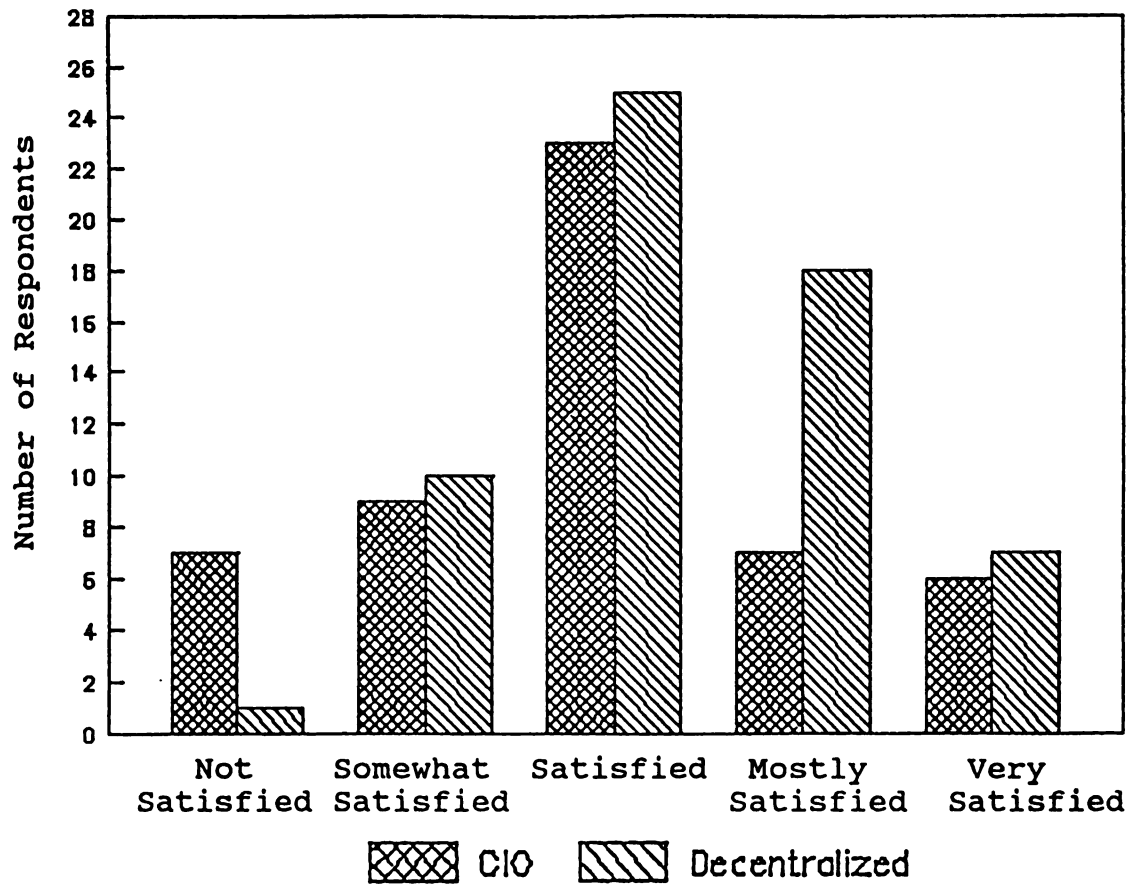


Fig. 4.31 -- Video Communication - Satisfaction
with Staff Recruitment and Development

Video Communication

Respondents reported higher ratings for the decentralized Video Communication managers for their efforts in staff recruitment and development in every "satisfaction" category except "not satisfied."

The average rating of user satisfaction was 2.9 for the CIO and 3.3 for the decentralized managers.

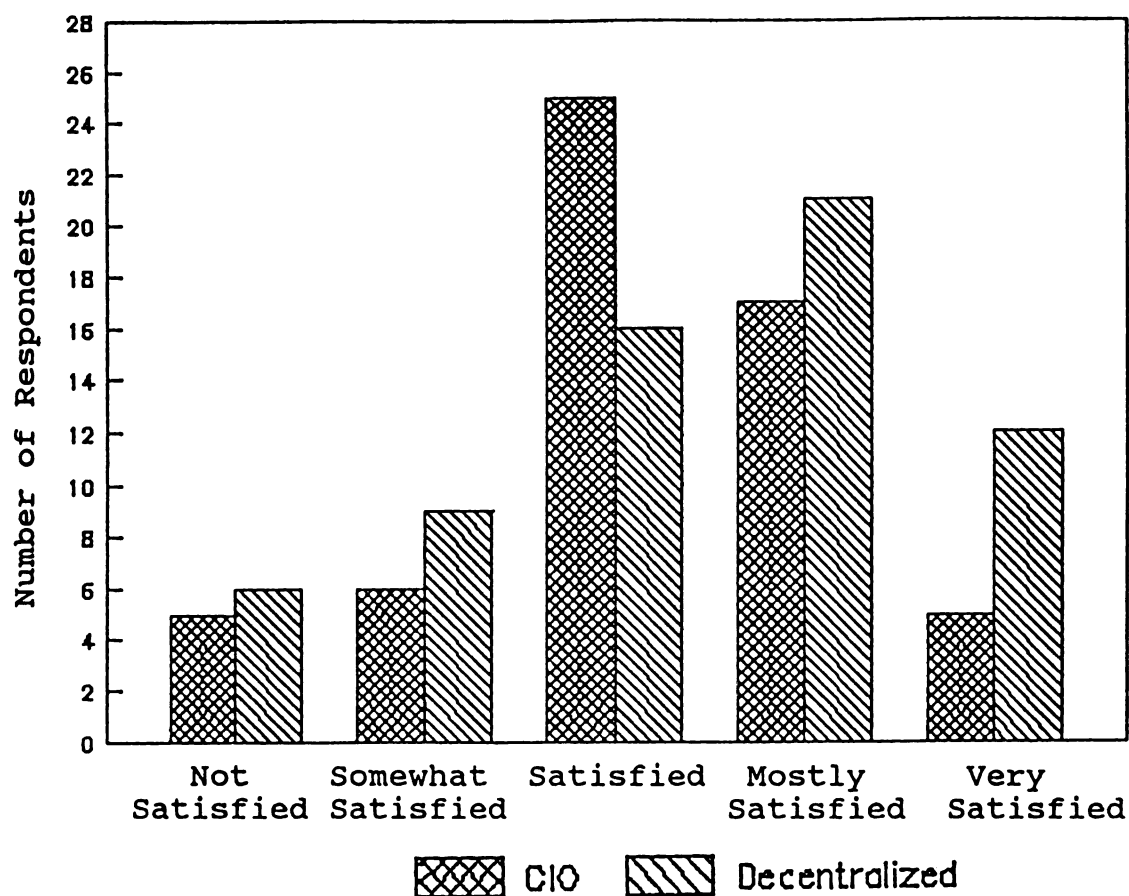


Fig. 4.32 -- Academic Computing - Satisfaction
with Staff Recruitment and Development

Academic Computing

Respondents reported higher ratings for the decentralized Academic Computing managers for their efforts in staff recruitment and development in every category except "satisfied."

The average rating of user satisfaction was 3.1 for the CIO and 3.3 for the decentralized managers.

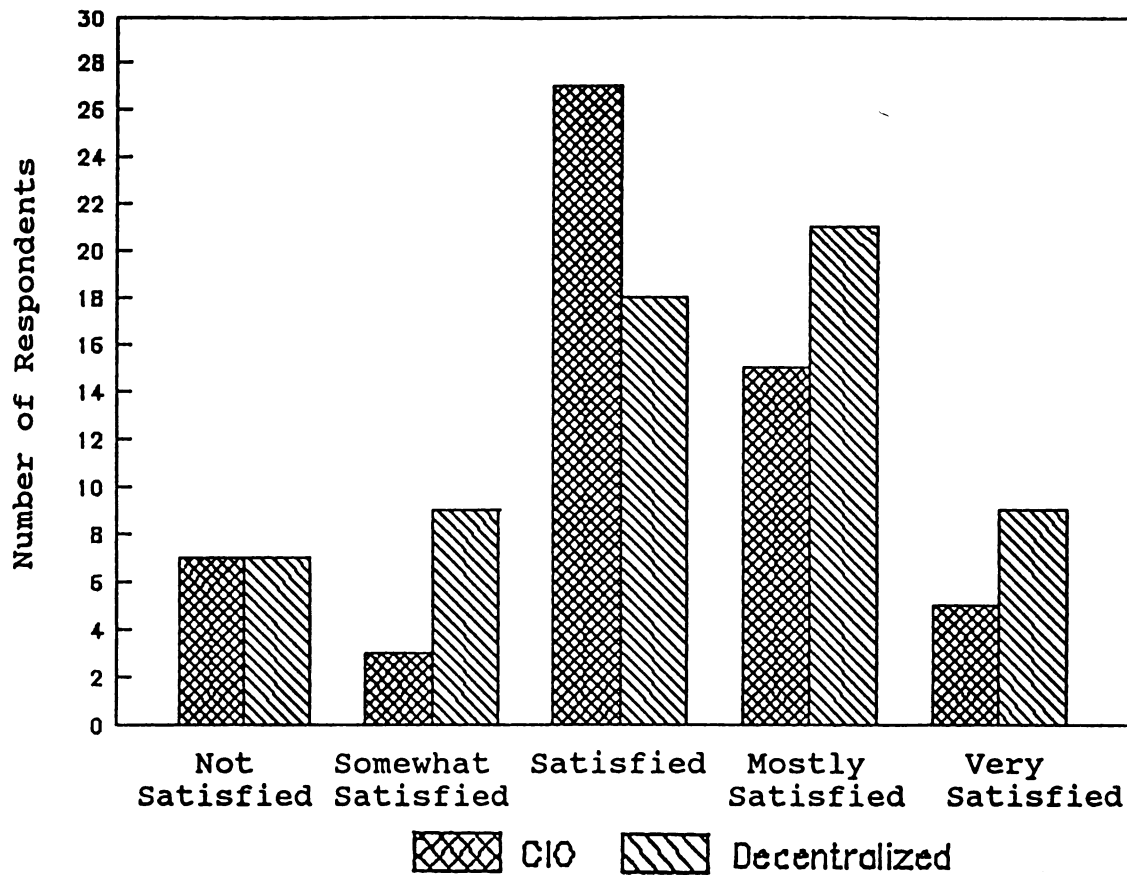


Fig. 4.33 -- Administrative Computing - Satisfaction with Staff Recruitment and Development

Administrative Computing

Respondents reported higher ratings for the decentralized managers of Administrative Computing in the "very satisfied," "mostly satisfied," and "somewhat satisfied" categories. The CIO received higher ratings in the "satisfied" category and an equal number of responses was received for both in the "not satisfied" category.

The average rating of user satisfaction with staff recruitment and development for Administrative Computing was 3.1 for the CIO and 3.2 for the decentralized managers.

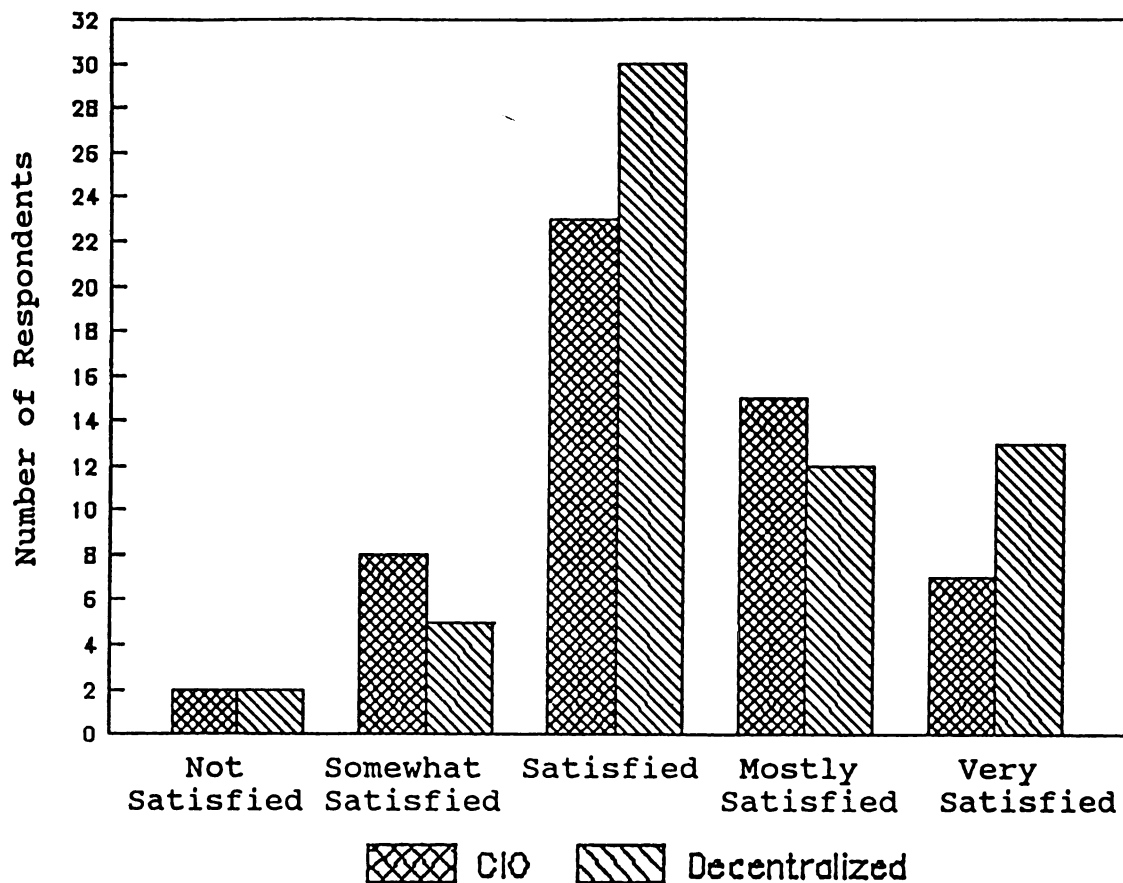


Fig. 4.34 -- Library Automation - Satisfaction
with Staff Recruitment and Development

Library Automation

Respondents reported higher ratings for the decentralized managers of Library Automation for their efforts in staff recruitment and development in the categories of "very satisfied" and "satisfied." The CIO received higher ratings in the categories of "mostly satisfied" and "somewhat satisfied." An equal number of responses was received for both in the "not satisfied" category.

The average rating of user satisfaction with staff recruitment and development for Library Automation was 3.3 for the CIO and 3.4 for the decentralized managers.

Most Satisfaction with Staff Recruitment and Development

Respondents were asked to select which function they were most satisfied with in the recruiting and developing efforts of the manager of that function. The survey results are shown in tabular form in Appendix I, Table I.12. The results are also depicted graphically in the bar chart shown on the following page.

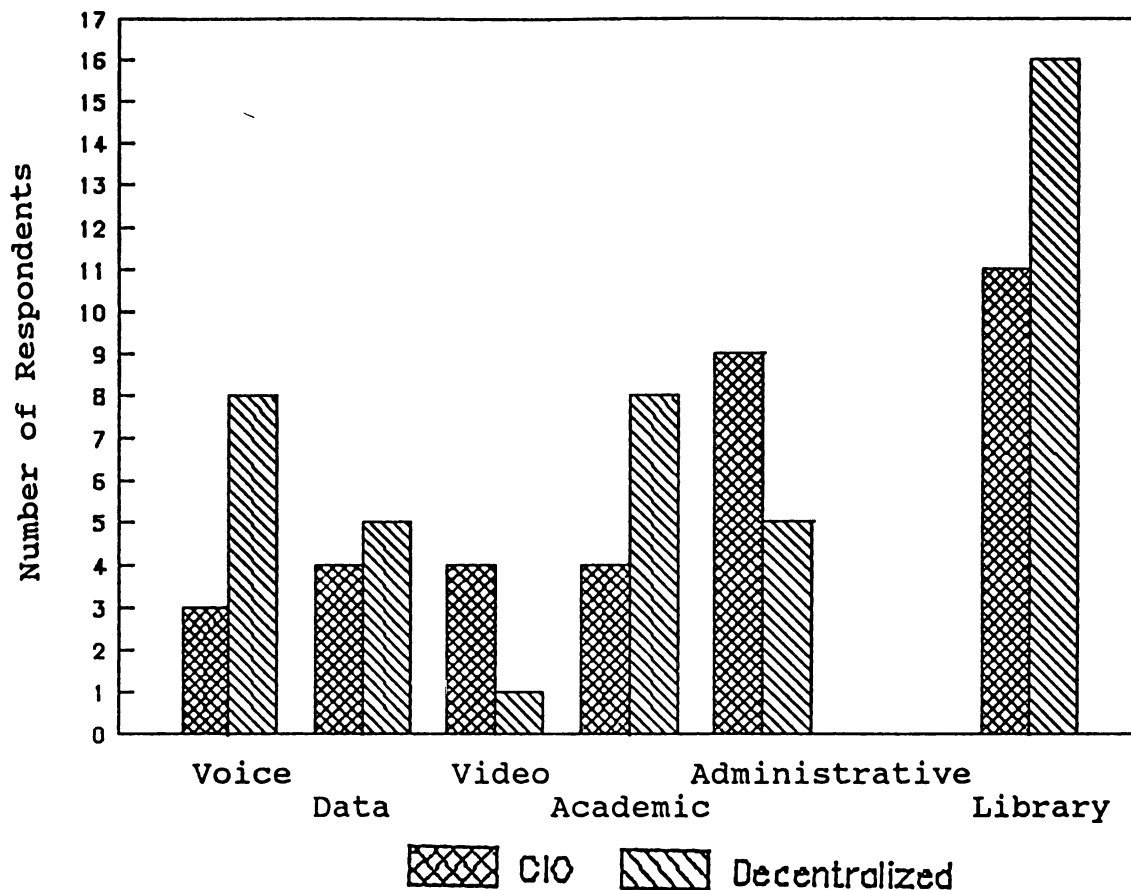


Fig. 4.35 -- Most Satisfaction with Staff
Recruitment and Development

The CIO received a higher number of responses than the decentralized managers in providing "most satisfactory" staff recruiting and developing in Video Communication and Administrative Computing. The decentralized managers received higher ratings in Voice and Data Communication, Academic Computing, and Library Automation.

Least Satisfaction with Staff Recruitment and Development

Respondents were also asked to select which function they were least satisfied with in the recruiting and developing efforts of the manager of that function. The survey results are shown in tabular form in Appendix I, Table I.13. The results are also depicted graphically in the bar chart shown on the following page.

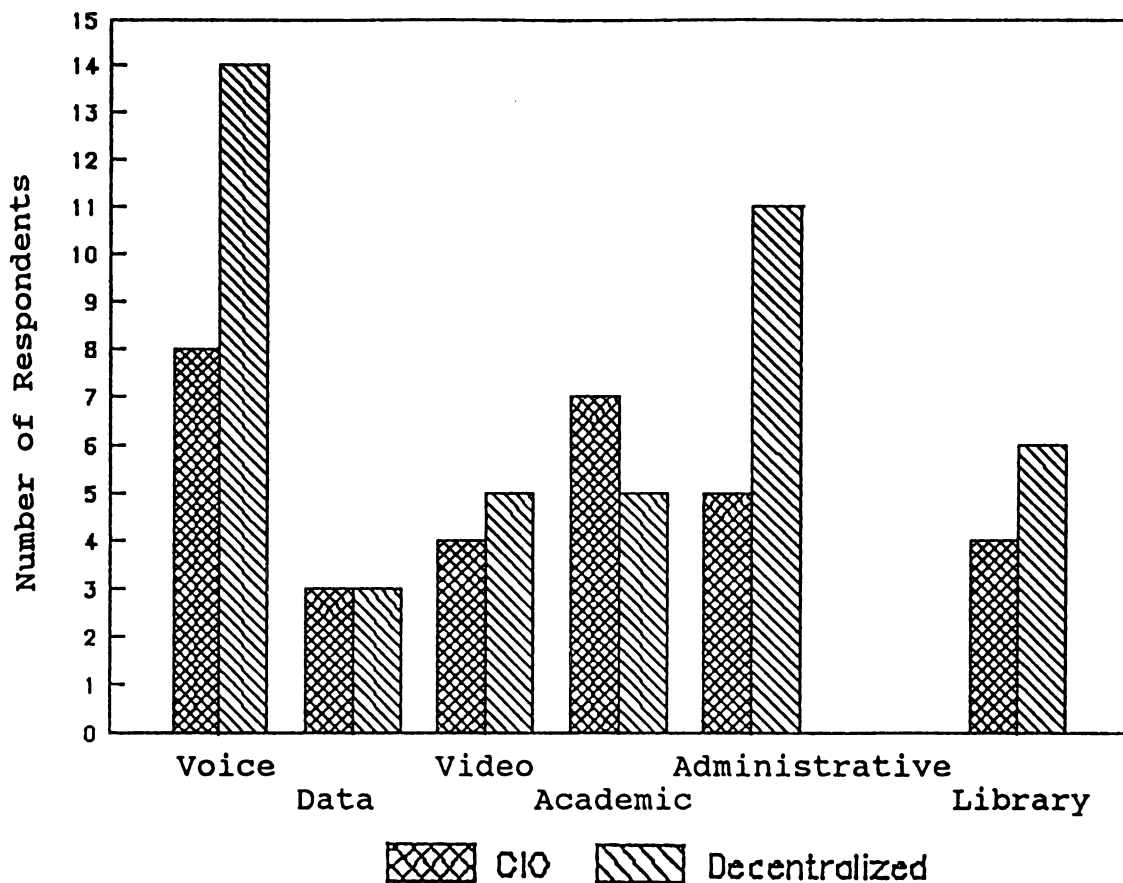


Fig. 4.36 -- Least Satisfaction with Staff
Recruitment and Development

Respondents reported that the functions that they were least satisfied with the efforts in recruiting and developing were Voice and Video Communication, Administrative Computing, and Library Automation when managed by a decentralized manager. Users reported their least satisfaction with the CIO when managing Academic Computing. An equal number of responses was received for both the CIO and the decentralized managers of Data Communications.

Research Question VI

Which management organization, if any, produced the highest level of satisfaction in providing support for the information technology resources used by instructional programs and in faculty and administrative office automation activities?

Respondents recorded their responses on a five point Likert type scale for this question according to the following key:

- 1 - Not Satisfied
- 2 - Somewhat Satisfied
- 3 - Satisfied
- 4 - Mostly Satisfied
- 5 - Very Satisfied

The test of the five levels of satisfaction related to providing support for information technology resources produced a Wilks' lambda of .93922, an F-value of 2.76124, and a p-value of .045. Statistical significance was found in this research question through the multi-variate analysis. However, the researcher has adopted a conservative position and concluded that this has happened by chance since there was no uni-variate significance at the .05 level. The results are shown in tabular form in Appendix I, Table I.14. The survey results are also depicted graphically in the bar charts shown on the following pages.

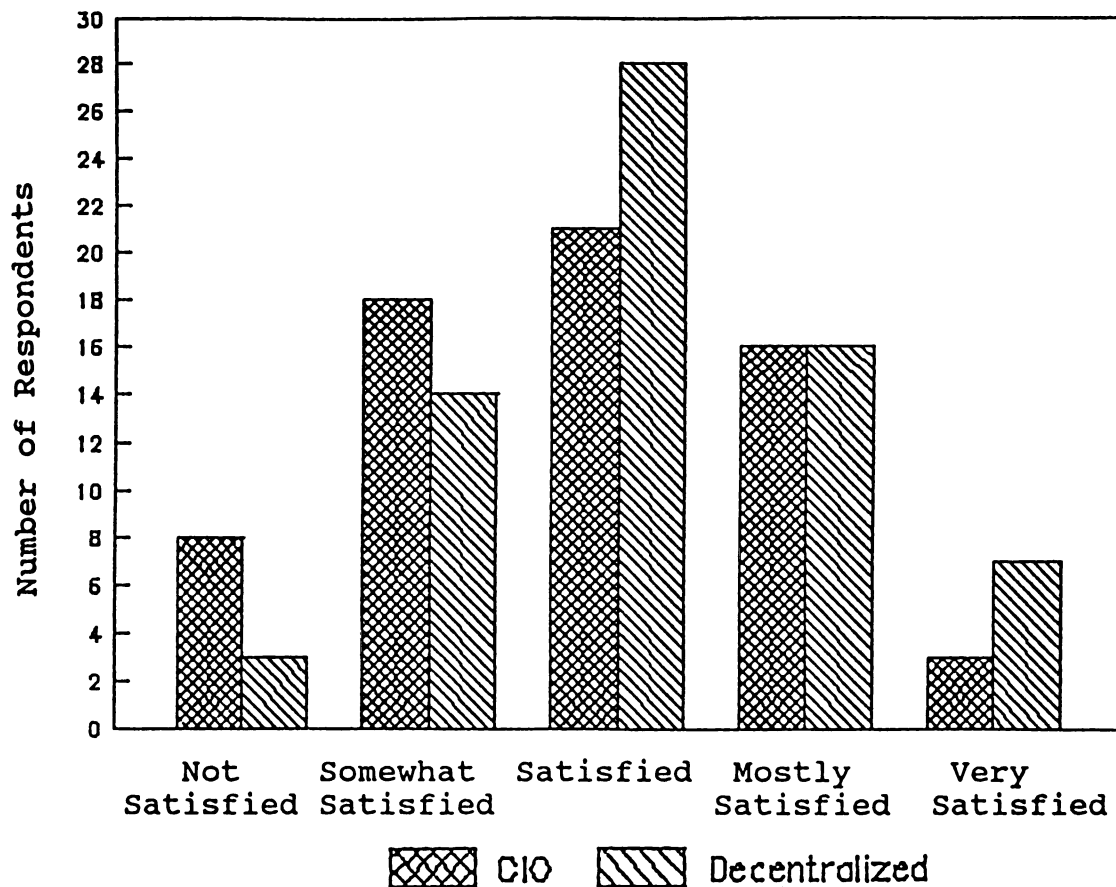


Fig. 4.37 -- Satisfaction with Support of Information Technology Resources for Instructional Programs

Instructional Programs

Respondents reported higher ratings for the decentralized managers efforts in support of instructional programs in the categories of "very satisfied" and "satisfied." The CIOs received higher ratings in the categories of "somewhat satisfied" and "not satisfied." An equal number of responses was received for both in the "mostly satisfied" category.

The average rating of user satisfaction with support of instructional programs was 2.8 for the CIO and 3.1 for the decentralized managers.

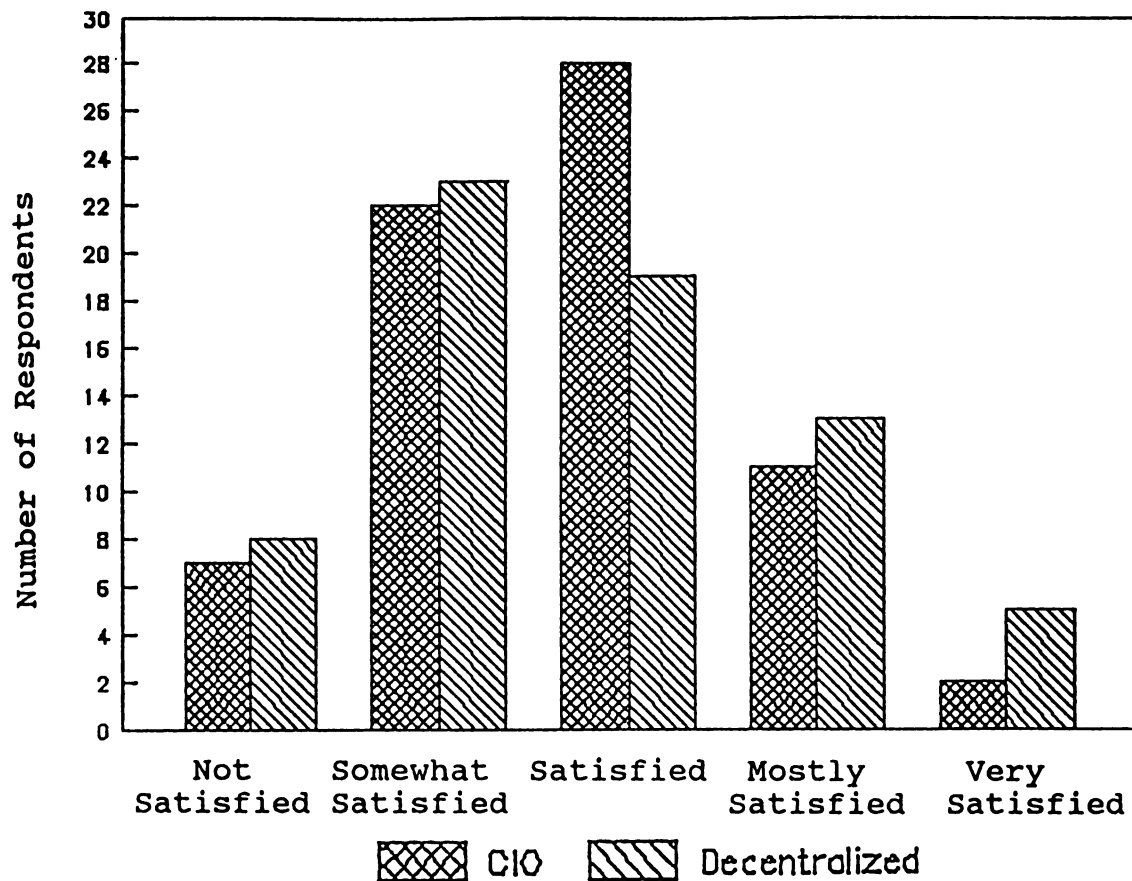


Fig. 4.38 -- Satisfaction with Support of Information Technology Resources for Faculty Office Automation

Faculty Office Automation

Respondents reported higher ratings for the decentralized managers efforts in supporting office automation in faculty offices in the categories of "very satisfied," "mostly satisfied," "somewhat satisfied," and "not satisfied." The CIOs received higher ratings in the "satisfied" category.

The average user rating of satisfaction with support of office automation for faculty offices was 2.7 for both the CIO and the decentralized managers.

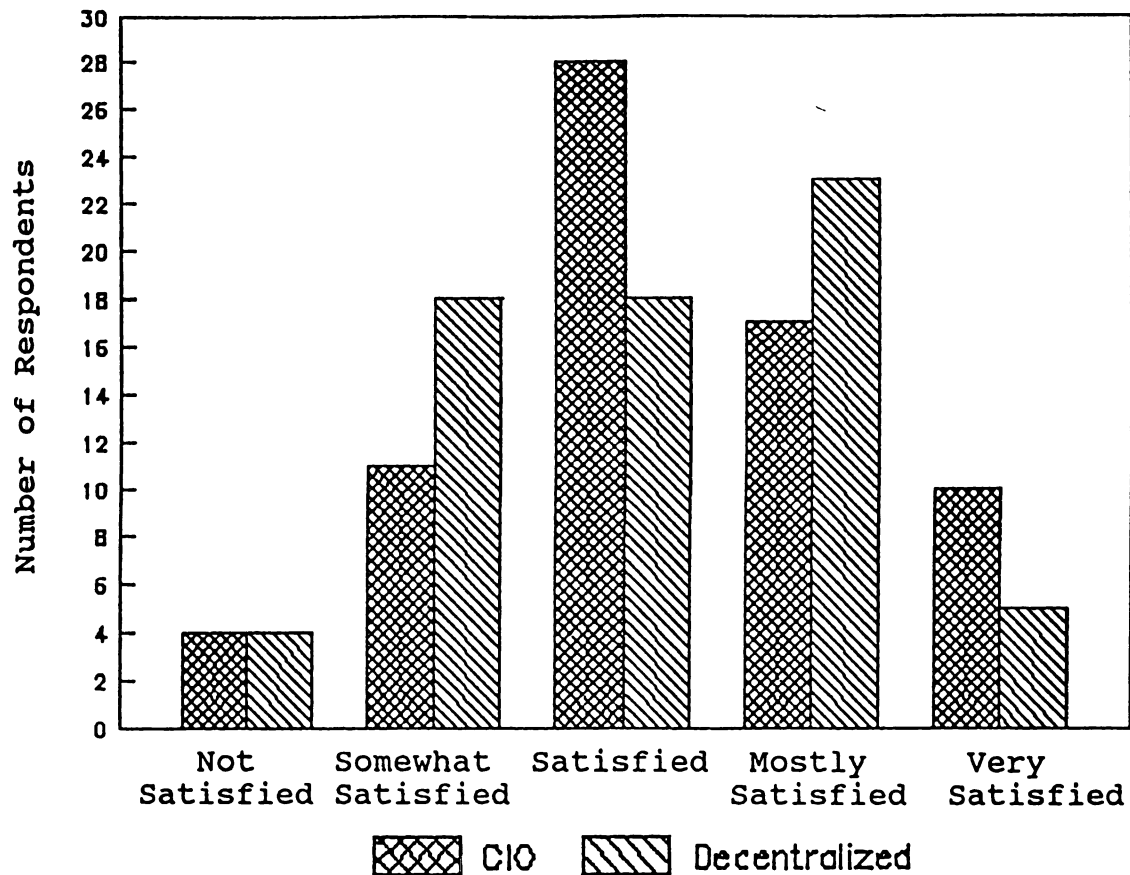


Fig. 4.39 -- Satisfaction with Support of Information Technology Resources for Administrative Office Automation

Administrative Office Automation

Respondents reported higher ratings for the decentralized managers support of office automation in administrative offices in the categories of "mostly satisfied" and "somewhat satisfied." The CIOs received higher ratings in the "very satisfied" and "satisfied" categories. An equal number of responses was received for both in the "not satisfied" category.

The average rating of user satisfaction with the support of office automation in administrative offices was 3.2 for the CIO and 3.1 for the decentralized managers.

Most Satisfactory Support

Respondents were asked to select which area (instructional programs, faculty office automation, and administrative office automation) they were most satisfied with the support services. The survey results are shown in tabular form in Appendix I, Table I.15. The results are also depicted graphically in the bar chart shown on the following page.

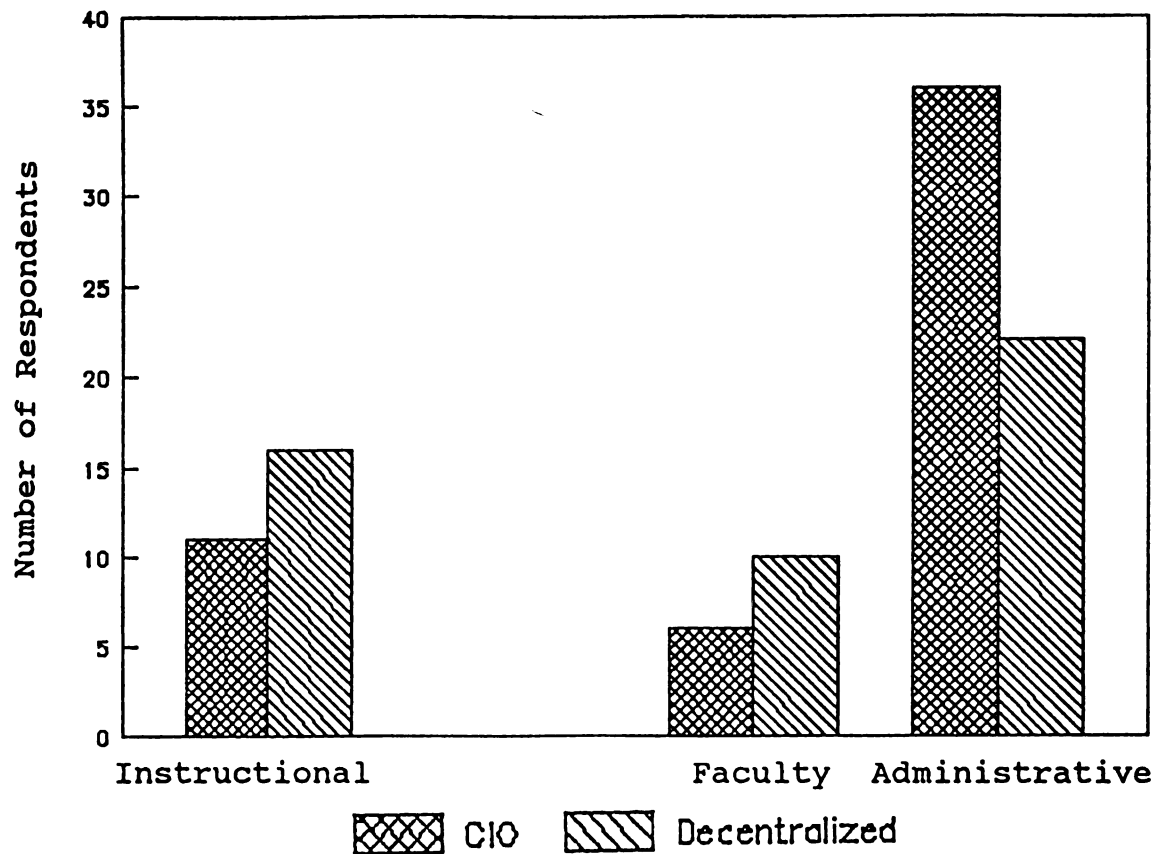


Fig. 4.40 -- Most Satisfaction with Support of Information Technology Resources

The CIOs received their highest rating in support of information technology resources in administrative offices. The decentralized managers received their highest ratings for the efforts in supporting instructional programs and faculty offices.

Least Satisfactory Support

Respondents were also asked to select which area (instructional programs, faculty office automation, and administrative office automation) they were least satisfied with respect to support services provided by the CIO and decentralized managers. The survey results are shown in tabular form in Appendix I, Table I.16. The results are also depicted graphically in the bar chart shown on the following page.

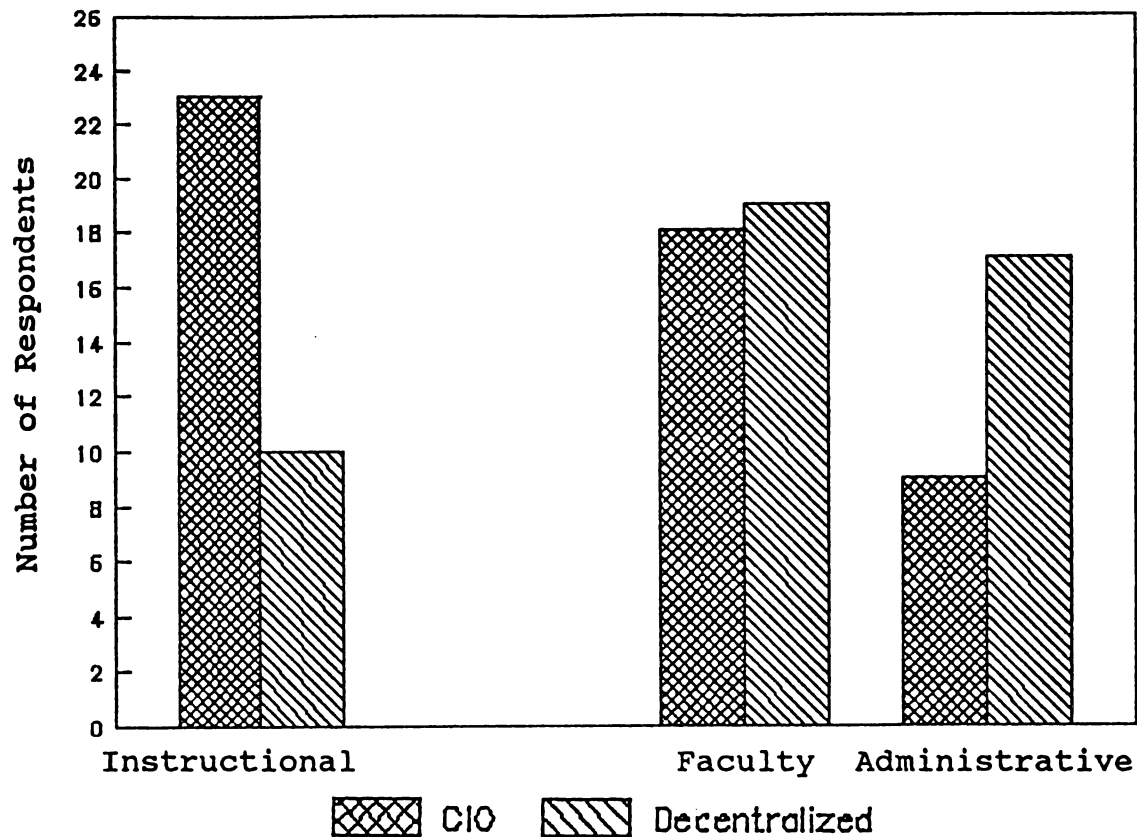


Fig. 4.41 -- Least Satisfaction with Support of Information Technology Resources

Respondents reported their most dissatisfaction with CIOs efforts in supporting instructional programs. The decentralized managers received the highest rating of dissatisfaction for support of faculty office automation and administrative office automation.

Chapter V

Summary, Conclusions, Implications and Reflections

Purpose

The researcher's purpose in this study was to present an analysis of user experiences with different management organizations (centralized vs. decentralized) and styles of management for computing and communication. The analysis was accomplished by estimating perceived user satisfaction with the functions performed and recording the users opinion of style.

A comparison was presented between the methods of organization and management style, with regard to the services they provide within the University.

Summary

Research Question I

The first research question asked respondents to report which management style best characterized their CIO or the decentralized managers of their institution. The

respondents were asked:

- if the manager makes decisions independently -
autocratic
- or if the manager seeks advice from each user group, then
makes decisions independently - consultative
- or if the manager actively engages user group members in
problem definition and decision making -
participative
- or if the manager accepts majority rule - democratic
- or if the manager is passive.

The summary of responses reveals the CIO's received the highest scores (83.4%) in the combined "best" management styles of consultative and participative (refer to Appendix I - Table I.21 for a complete tabulation of responses). Several studies reviewed for this research reported that these two management styles produced the "best" results in an environment where tasks were complex and non-routine, typically the type of work environment found in today's information technology organizations.

The next highest score in this combined management style was reported for the decentralized manager of Library Automation at 82.9%. The title of this manager was most frequently reported as "Dean" (98.6%). The reason for the closeness of scores may be attributed to the fact that libraries are becoming "electronic libraries" using complex computing and

communication information technologies. Thus, the duties and responsibilities of the decentralized Library Automation manager and the CIO are similar and require a management style that works well in a complex area.

Also interesting to note is that the CIO and decentralized manager of Library Automation received comparable scores for the autocratic, democratic and passive management styles. Both received only 1.4% of the responses for the passive style indicating that each is active in the decision making process. No one reported the CIO as having a democratic style and only 2.9% of the respondents reported this as the dominant style for the Library Automation manager. The low response rate for these two categories of management style for both managers may be indicative of the similarity in the nature of the work and the management style required to be effective.

The CIO received 15.3% of the responses for being autocratic while the Library Automation manager received 12.9%. It would be interesting to re-visit this question in 2 to 4 years to see if the management style of "my way or the highway" is gaining or losing favor or remaining the same.

The combined responses for the "best" management styles (consultative - participative) for the decentralized managers of Data and Video Communications, and Academic and

Administrative Computing were close to each other but did not approach the level of the ratings for the CIO and Library Automation manager. The Voice Communication manager had the lowest number of responses for the "best" management style and the highest number of responses for the "worst" management style - autocratic.

The conclusion one might infer by this study is that for any organization to be effective it should be driven by (and tightly coupled to) the academic mission of the university. For complex information resources to be considered effective they should be managed effectively which requires the "best" management style, namely the consultative and participative styles. The CIOs have recognized this requirement, hence the high response rate reported for them for the "best" management styles. The library of a university exists for research and learning, hence the Library Automation managers have implemented the "best" management style to support their university effectively.

The services of the Video Communications managers are used mostly by the academic community as are the services of Data Communications and Academic Computing, hence the responses reflect this theme of support for the academic mission. The lowest response rates for the "best" management styles were reported for the Administrative Computing manager and the Voice Communication manager, areas that this survey found to

predominately report to the Business Affairs operation.

Research Question II

In the second research question respondents were asked to report which management organization, if any, produced the highest level of satisfaction in providing voice, data, and video communication; academic and administrative computing; and library automation.

The CIOs did not record as high a level of satisfaction as the decentralized managers. The CIOs average ratings of level of satisfaction ranged from one-tenth of a point below the average of the decentralized managers to five-tenths of a point below. This was a surprising result in view of the high ratings received by the CIOs for having the "best" management style. Consequently, the researcher felt it was necessary to contact several respondents for a personal interview as a means to better explain the results. The respondents comments are recorded in Appendix J. Several of the institutions that reported the CIO organization in operation at their school stated that this organizational structure was relatively new to them and that perhaps a highly effective organization was still to be realized.

A vice president at a western university was asked during a telephone interview if she could provide insight as to why

the CIOs were receiving lower ratings in the level of satisfaction. She replied that a reason could be that decentralized managers were personally closer to the users of their services and could be seen as more responsive since they were greater in number than the single CIO.

Respondents were asked to record comments on the survey form regarding services managed by the CIO that they regarded as less than satisfactory. There were several written comments generally of two types: old equipment and poor leadership.

By contrast, there were only two written comments from the respondents who were satisfied with their CIO's level of service. One respondent commented that she was very satisfied with the voice communication function because the equipment was new and easy to use. The second respondent wrote that he was very satisfied with the newly installed library cataloging and on-line search computer system.

The written comments from respondents who were reporting high satisfaction with the decentralized managers level of service were almost unanimous in their statements, reporting "good service," "quick response," and "user friendly."

Written comments from respondents reporting low satisfaction with the decentralized managers were of two types (identical to the comments recorded for the CIO): old equipment and

poor leadership.

The conclusion reached by the researcher is that a high level of satisfaction is produced by either the CIO or the decentralized manager through personal, responsive service and new equipment. Also, since the CIO (or central organization concept) is relatively new at most of the institutions there has not been enough time to compare this type of organization to the organizations it replaced.

A recurring theme throughout the personal interviews was that institutions that were struggling to replace old equipment were not highly satisfied with the service provided by the equipment currently installed. However, this did not reflect poorly on the CIO since they were preparing initiatives and justification for equipment replacement. A belief was developed by the researcher that the CIOs were more aggressive in their pursuit of new equipment acquisition while the decentralized managers were waiting for direction from the top of the organization.

Another thought that came from the personal interviews (but one that is somewhat reinforced by written comments on the survey forms) is that personal, responsive service produces a higher degree of satisfaction.

Research Question III

The third research question asked which management organization, if any, produced the highest level of satisfaction in providing current and future budget planning for voice, data, and video communication; academic and administrative computing; and library automation.

The CIOs and the decentralized managers received comparable ratings from respondents regarding satisfactory budget planning. Of interest to note however, is the similarity in several functions in the number of respondents reporting less than satisfactory budget planning as those reporting more than satisfactory budget planning.

This was the only research question in the survey that produced these results.

The decentralized managers received an almost equal number of "satisfactory minus" responses as "satisfactory plus" responses for all functions except Library Automation. For this function the decentralized manager received a significantly higher number of favorable ratings over unfavorable (29 to 18 - refer to Appendix I, Table I.5).

The CIOs received similar responses ("satisfactory minus" vs. "satisfactory plus") in the functions of Voice

Communication and Academic and Administrative Computing. However, exceptions to this observation were found in the remaining functions, namely:

- Data Communications where more respondents reported greater satisfaction with the CIO's efforts.
- Video Communications where more respondents reported less satisfaction with the CIO's efforts.
- Library Automation where more respondents reported greater satisfaction with the CIO's efforts (similar to the decentralized managers efforts).

These exceptions were discussed during the personal interviews. Many administrators commented that Data Communications and Library Automation were fairly well defined technologies and that the managers in charge of these functions (the CIO or the decentralized manager) had achieved "clarity of mission." Also that budgets had been committed to projects in these areas, plans established, and implementation was in process or completed.

On the subject of budget planning for Video Communication and the poor showing by the CIOs, one dean commented that this was a "rapidly emerging area that was not receiving sufficient planning." The dean felt that their CIO had little interest or knowledge in this area, especially with regard to distance learning. When asked for an opinion as

to why the decentralized managers of Video Communications would receive an equal number of less than satisfied and more than satisfied responses the dean said "Well, maybe people expect more from a CIO."

A Provost from a western university stated that perhaps this question should be asked at a later time, if and when funding difficulties diminish. The provost said that during this current difficult period "you may not get a true picture. Many administrators may report what they see as a result of short term planning to achieve minimum cost objectives as opposed to long term strategic budget planning."

Research Questions IV, V, VI

In the remaining research questions respondents were asked which management organization, if any, produced the highest level of satisfaction in providing access to information resources; in providing staff recruitment and development; and in providing support for information technology resources.

An examination of the survey results revealed that both the CIOs and the decentralized managers were reported as doing equally well in satisfying their users.

These questions and the survey results support the study conducted by the editors of the Technology Management Newsletter for Information Executives as reported in Chapter II of this research. The editors study concluded that 7 out of 11 CIO job duties were common to all Information System executives (including the decentralized managers) as well as the CIO. These 7 job duties were identified as being operational in nature and were not considered to be strategic. The issues of providing access to information resources, recruiting and developing staff, and supporting information technology resources can be seen as operational in nature and as such, performed equally well by either management organization.

Conclusions

In this study it was determined that the predominant management style of a CIO was either "consultative" or "participative." It was found in a review of pertinent literature for this study that these two management styles would work "best" in an environment where tasks were complex and non-routine. The only decentralized manager who received comparable ratings in the "best" management styles was the manager responsible for Library Automation, typically the Dean of the Library. The researcher concludes that the CIO and the Dean of the Library have a better understanding of the mission and culture of their

institution (as compared with the other decentralized managers) and an appreciation for the goals of higher education. In all likelihood the CIO and Library Dean would probably not be effective managers if they were managing their activities as though they were a business without being sensitive to the things that make higher education different.

A second conclusion is that the CIOs do not produce more satisfaction with the users of their services than the individual, decentralized managers. This may be due to the excessive emphasis placed by many institutions on the CIO position and the consequent raising of user expectations. Another reason may be that the CIOs have become a level of executive management that is one step removed from the user and personal interaction with the user has been lost.

Implications for Further Research

As a result of this study there is an implication for further research to ask the CIO and the decentralized managers for the mission statement of their departments for comparison to their universities mission statement. The researcher believes there will be a high correlation between department mission statements that support the institutions mission statement and departments that use the "best" management styles to produce an effective organization.

Further study could also be to investigate the thoughts developed by the researcher from the results of the second research question. These thoughts were:

- users were more dissatisfied with older, inefficient equipment lacking modern features than they were dissatisfied with the manager of the equipment
- CIOs were aggressively pursuing equipment upgrades while the decentralized managers were waiting for direction from upper management
- personal, responsive service produces higher user satisfaction regardless of equipment age or type.

Each of these could be investigated fully by a study that correlated equipment features and acquisition date with level of satisfactory service provided. The "personal" issue could also be studied further.

Reflections

The researcher expected to find but did not that computing and communication functions managed by the CIO produced higher user satisfaction than the decentralized managers.

The researcher believes that information technology resources are becoming so complex that the autocratic management style will become as obsolete as the democratic and passive styles.

Appendix A

Ferris State University Peer Institutions

Ferris State University Peer Institutions

Ball State University	Northern Kentucky University
California Polytechnic State University	Purdue University Calumet
Central Connecticut State University	Sam Houston State University
Eastern Kentucky University	Southwest Texas State Univ.
Fitchburg State College	Trenton State College
Florida Agricultural & Mechanical University	University of Louisville
Idaho State University	University of Northern Iowa
Kansas State University	University of Southern Mississippi
Mississippi State University	University of West Florida
* Moorhead State University (MN)	University of Wisconsin-Platteville
**Morehead State University (KY)	Utah State University
Murray State University	Western Kentucky University

* Moorhead State University is located in Minnesota.

** Morehead State University if located in Kentucky.

Explanation of Characteristics

(The primary source of funding for each financial institution listed is provided by the state.)

1. Founded:

The year the institution came into existence or was chartered as an educational entity.

2. Type of Institution:

Comp (Comprehensive) - awards the baccalaureate and may also award the associate; offers post baccalaureate degrees primarily at the master's, specialist's, or professional level, although one or two doctoral programs may be offered.

Univ (University) - offers a full four-year undergraduate program plus post baccalaureate degrees through the doctorate in more than two academic and/or professional fields.

3. Degrees Offered by Institution:

- A - Associate (2 year program)
- B - Baccalaureate (3-5 year program in liberal arts, science, professional or pre-professional)
- M - Master's (1-2 year program in liberal arts and sciences or the next degree following first professional)
- D - Doctorate (3-6 year program beyond baccalaureate resulting in highest degree awarded in research oriented academic discipline)
- P - first professional (6 year program resulting in degree required to be academically qualified to practice in certain professions such as law and medicine)
- O - other advanced degree (2-3 post baccalaureate program in certain fields such as education and engineering)

4. Campus Location:

- Metropolitan - campus is located in an area with population of over 500,000
- City - campus is located in an area with population of 50,000 to 500,000
- Small Town - campus is located in an area with population under 50,000
- Rural - campus is located outside of any area of concentrated population

5. Enrollment:

Total number of matriculated full time and part time students enrolled in undergraduate and/or graduate degree programs as of Fall, 1989.

6. **Tuition:**

The standard yearly educational costs for matriculated students who are state residents not including optional fees or estimated expenses. For institutions with different tuition rates for undergraduate and graduate students, separate figures are shown for each labeled UG and GRAD.

<u>Founded</u>	<u>Type of Institution</u>	<u>Degrees</u>	<u>Campus Location</u>	<u>Enrollment</u>	<u>Tuition</u>	<u>Major Academic Units</u>
Ball State University 1918	Univ	A, B, M, D, O	City	18,993	UG \$2110 GRAD \$2116	Applied Sci. & Tech., Business, Architecture & Planning, Fine Arts Sci. & Humanities, Music, Nursing, Teachers College, Phys. Ed. & Athletics
California Polytechnic State Univ. San Luis Obispo 1901	Comp	A, B, M	Small Town	17,564	UG \$989 GRAD \$999	Agriculture, Arch. & Env. Design, Business, Engineering, Lib. Arts, Professional Studies & Ed., Science & Mathematics
Central Connecticut State University 1849	Comp	B, M, O	City	14,463	UG \$1865 GRAD \$2211	Arts & Sciences, Business, Education & Professional Studies, Technology
Central Missouri State University 1871	Comp	A, B, M, O	Small Town	10,813	UG \$1680 GRAD \$2130	Applied Science & Tech., Arts & Sciences, Bus. & Econ., Education & Human Svcs., Library Services
Eastern Kentucky Univ. 1906	Comp	A, B, M, O	Small Town	14,268	\$1180	Applied Health & Nursing, Applied Arts & Tech., Arts & Humanities, Education, Health & Phys. Ed., Rec. & Athletics, Law Enforcement, Natural Mathematical Sci., Social & Behavioral Science

<u>Founded</u>	<u>Type of Institution</u>	<u>Degrees</u>	<u>Campus Location</u>	<u>Enrollment</u>	<u>Tuition</u>	<u>Major Academic Units</u>	
Ferris State University	1884	Comp	A, B, M, P	Small	11,847	UG \$2238	Occupational Education, Optometry, Allied Health, Arts & Sci., Business, Education, Pharmacy, Technology
Fitchburg State College	1894	Comp	B, M	Small Town	6,224	UG \$2058 GRAD \$1460	None listed, Accreditation: Nursing
Florida Agricultural & Mech. University	1887	Comp	A, B, M, O, P	City	7,469	UG \$1440 GRAD \$1822	Arts & Sci., Education, Engineering Sci. Tech. & Agriculture, Pharmacy & Pharmaceutical Sci., Allied Health Sci., Architecture, Bus. & Industry, Journalism, Media & Graphic Arts, Nursing
Idaho State University	1901	Univ	A, B, M, D, P, O	Small Town	8,700	UG \$1160 GRAD \$1526	Arts & Sci., Business, Education, Health-related Professions, Pharmacy, Engineering, Vocational Education
Kansas State University	1863	Univ	A, B, M, D, P	Small Town	20,110	UG \$1557 GRAD \$1890	Journalism & Mass Comm., Agriculture, Arch. & Design, Arts & Sci., Bus. Admin., Education, Engineering, Human Ecology, Veterinary Medicine

	<u>Founded</u>	<u>Type of Institution</u>	<u>Degrees</u>	<u>Campus Location</u>	<u>Enrollment</u>	<u>Tuition</u>	<u>Major Academic Units</u>
Mississippi State University	1878	Univ	B,M,D,P,O	Small Town	13,141	UG \$1987 GRAD \$1986	Agriculture & Home Econ., Arts & Sci., Bus. & Industry, Education, Engineering, Veterinary Medicine, Accountancy, Architecture, Forest Resources
Moorhead State University (MN)	1887	Univ	A,B,M,O	City	8,793	\$1976	Arts & Hum., Business, Industry & Applied Programs, Education & Region Center, Natural & Soc. Sciences
Morehead State University (KY)	1922	Comp	A,B,M,D,O	Small Town	7,695	\$1320	Applied Sci. & Tech., Arts & Sci., Business, Education & Behavioral Sci.
Murray State University	1908	Comp	A,B,M,O	Small Town	8,044	\$944	None listed, Accreditation: Animal Technology & Nursing
Northern Kentucky University	1968	Comp	A,B,M,P	Small Town	9,555	UG \$1290 GRAD \$1410	Arts & Sci., Business, Professional Studies, Law
Purdue University Calumet	1951	Comp	A,B,M	City	7,789	UG \$2110	Liberal Arts & Science, Professional Studies
Sam Houston State University	1879	Comp	B,M,D	Small Town	12,352	\$ 384	None listed, Accreditation: Regional

<u>Founded</u>	<u>Type of Institution</u>	<u>Degrees</u>	<u>Campus Location</u>	<u>Enrollment</u>	<u>Tuition</u>	<u>Major Academic Units</u>
Southwest Missouri State University Math	1905	Comp A,B,M	City	18,003	UG \$1790 GRAD \$ 781	Arts & Letters, Bus. Admin., Ed. & Psych., Hlth. & Appl. Sci.,
Southwest Texas State University	1889	Comp A,B,M	Small Town	10,770	UG \$1042 GRAD \$ 730	Applied Arts & Tech., Bus., Ed., Fine Arts & Comm., Hlth. Prof., Liberal Arts, Sci.
Trenton State College	1855	Comp B,M	Small Town	7,352	UG \$3110 GRAD \$3600	Arts & Sci., Bus., Ed., Nursing, Tech.
University of Louisville	1798	Univ A,B,M,D,P,O	Metro	23,186	UG \$1608 GRAD \$1768	Arts & Sci., Urban & Pub. Affairs, Bus., Dentistry, Ed., Law, Medicine, Music, Nursing, Scientific School
University of Northern Iowa	1876	Comp B,M,D,O	Small Town	11,837	\$1880	Bus. Admin., Education, Humanities & Fine Arts, Natural Sci., Soc. & Beh. Sci., Health Phys. Ed & Leisure Svcs., Music
University of Southern Mississippi	1910	Univ B,M,D,O	Small Town	11,544	UG \$ 927	Bus. Admin., Ed. & Psych., Health & Human Sci., Lib. Arts, Sci. & Tech., Arts, Communications, Engineering Tech., Home Econ., Human Performance & Recreation, Library Sci., Music, Nursing, Prof. Accountability, Pub. & Int. Affairs, Social Work

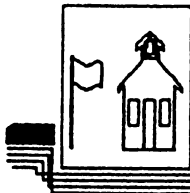
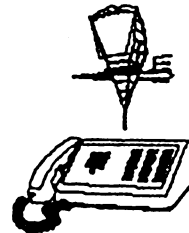
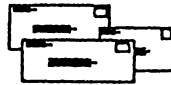
<u>Founded</u>	<u>Type of Institution</u>	<u>Degrees</u>	<u>Campus Location</u>	<u>Enrollment</u>	<u>Tuition</u>	<u>Major Academic Units</u>
University of West Florida	1963	Comp B,M,D	City	7,576	UG \$1194	Arts & Sciences, Business, Education
University of Wisconsin-Platteville	1866	Comp A,B,M	Small Town	5,430	UG \$1789	Agriculture, Arts & Sci., Bus. Industry & Comm., Education, Engineering
Utah State University	1888	Univ B,M,D,O	Small Town	12,650	UG \$2058 GRAD \$1482	Agriculture, Business, Education, Engineering, Family Life, Humanities, Arts & Soc. Studies, Natural Resources, Accountancy, Science
Western Kentucky University	1906	Comp A,B,M,D,O	City	14,821	UG \$1320 GRAD \$1400	Bus. Admin., Ed. & Behavioral Sci., Sci. Tech. & Health, Arts, Hum., Social Sciences

Appendix B

Survey Questionnaire



Survey of Computing and Communication Services



You indicate your voluntary
agreement to participate by
completing and returning
this questionnaire.

Note: Management Style

For each of the questions requesting your opinion of the management style of the manager in charge of a function please answer according to this key:

- 1- Manager makes decisions independently.
- 2- Manager seeks advice from each user group, then makes decisions independently.
- 3- Manager actively engages user group members in problem definition and decision making.
- 4- Manager accepts majority rule.
- 5- Manager is passive.

Level of Satisfaction

For each question requesting your opinion of your level of satisfaction with the service provided by the manager of a function please answer according to this key:

- 1- Not satisfied
- 2- Somewhat satisfied
- 3- Satisfied
- 4- Mostly satisfied
- 5- Very satisfied

Definition of Terms

Centralized Management - control of all of the primary functions of academic computing, administrative computing and telecommunications are located under one manager reporting to a high level institution executive.

Decentralized Management - control of the primary functions of academic computing, administrative computing and telecommunications are located under separate, discrete managers contained within different divisions of the institution.

CIO - Chief Information Officer, the person charged with managing all of the information technology in the institution.

Voice Communication - the transmission of speech using telephone switching equipment transmitting over telephone wire, fiber optic glass and microwave radio signals. The telephone switching equipment is also used for facsimile telegraph.

Data Communication - the transfer of data between computers or computers and terminals using a variety of media (telephone wire, fiber optic glass, microwave radio signals) according to a specific data transmission protocol.

Video Communication - the transmission of video signals ranging from compressed video (64 Kbps) to full motion video (92 Mbps) over telephone wire, coaxial cable, fiber optic glass and microwave radio signals. Video signals are transmitted for the purpose of closed circuit television, public television, teleconferencing and uplink and/or downlink of satellite signals.

Academic Computing - the department that assists faculty with developing computer literacy and using computers as an instructional delivery method.

Administrative Computing - the department that stores records and files that are accessed by the administrators of an institution of higher education to maintain, monitor and control data recorded on students, personnel, budgets and institutional assets.

Library Automation - the process that provides computer assistance to local and remote catalog searching of library holdings.

- I. If your institution has a Chief Information Officer (CIO) with responsibility for managing the functions of Academic Computing, Administrative Computing and Telecommunications (voice, data, video) please provide the following information. If not, proceed to question II.

- A. Title of CIO position: _____
- B. Title of position to which the CIO reports: _____
- C. Which term best describes the management style of this manager? (Circle one)
1. Manager makes decisions independently.
 2. Manager seeks advice from each user group, then makes decisions independently.
 3. Manager actively engages user group members in problem definition and decision making.
 4. Manager accepts majority rule.
 5. Manager is passive.

Please proceed to question III

- II. Please identify who manages the following functions and select which term best describes the person's management style:

	Title of Manager	Title of position to which this manager reports
A. Voice Communication	_____	_____
management style	1 2 3 4 5	
B. Data Communication	_____	_____
management style	1 2 3 4 5	
C. Video Communication	_____	_____
management style	1 2 3 4 5	
D. Academic Computing	_____	_____
management style	1 2 3 4 5	
E. Administrative Computing	_____	_____
management style	1 2 3 4 5	
F. Library Automation	_____	_____
management style	1 2 3 4 5	

III. Please indicate your level of satisfaction with the service provided for each of the following functions:

	Level of Satisfaction (circle one)				
A. Voice Communication	1	2	3	4	5
B. Data Communication	1	2	3	4	5
C. Video Communication	1	2	3	4	5
D. Academic Computing	1	2	3	4	5
E. Administrative Computing	1	2	3	4	5
F. Library Automation	1	2	3	4	5

With which above are you most satisfied? ____

Why?

With which above are you least satisfied? ____

Why?

IV. Please indicate your level of satisfaction with the current and future budget planning for each of the following resources:

	Level of Satisfaction (circle one)				
A. Voice Communication	1	2	3	4	5
B. Data Communication	1	2	3	4	5
C. Video Communication	1	2	3	4	5
D. Academic Computing	1	2	3	4	5
E. Administrative Computing	1	2	3	4	5
F. Library Automation	1	2	3	4	5

With which above are you most satisfied? ____

Why?

With which above are you least satisfied? ____

Why?

- V. Please indicate your level of satisfaction with the access by students, faculty and staff to voice, data and video resources:

	Level of Satisfaction (circle one)				
A. Student Access	1	2	3	4	5
B. Faculty Access	1	2	3	4	5
C. Staff Access	1	2	3	4	5

With which above are you most satisfied? ____

Why?

With which above are you least satisfied? ____

Why?

- VI. Please indicate your level of satisfaction with the staff recruitment and development of each of the following functions:

	Level of Satisfaction (circle one)				
A. Voice Communication	1	2	3	4	5
B. Data Communication	1	2	3	4	5
C. Video Communication	1	2	3	4	5
D. Academic Computing	1	2	3	4	5
E. Administrative Computing	1	2	3	4	5
F. Library Automation	1	2	3	4	5

With which above are you most satisfied? ____

Why?

With which above are you least satisfied? ____

Why?

- VII. Finally, please indicate your level of satisfaction with end-user support of information technology resources (such as software, hardware, documentation, data bases, network, maintenance, training) for:

Level of Satisfaction
(circle one)

A. Instructional Programs	1	2	3	4	5
B. Faculty Office Automation	1	2	3	4	5
C. Administrative Office Automation	1	2	3	4	5

With which above are you most satisfied? ____

Why?

With which above are you least satisfied? ____

Why?

- VIII. Would you be willing to participate in a telephone or personal interview to discuss the topics described here?

Yes ____

No ____

Are there any comments you would like to make concerning the management of the functions of Academic and Administrative Computing and Telecommunications? Please use this space if you have any comments:

Your participation is appreciated. Would you like a summary of this survey? If yes, please include your business card when you return the survey.

Yes _____

No _____

Appendix C

Endorsement Letter

Ferris State University

Office of Business Affairs

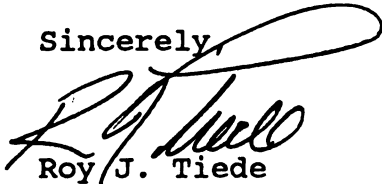
August 21, 1990

To whom it may concern:

Jerry A. Nogy, Assistant Vice President for Information Services and Telecommunications, is undertaking research to satisfy the requirements of the Ph.D in College and University Administration at Michigan State University.

Mr. Nogy has the full support of the University in the endeavor. He may have access to any equipment to facilitate the research and has been given permission to use Ferris letterhead stationery and envelopes for any external correspondence.

Sincerely,



Roy J. Tiede
Vice President
for Business Affairs

RJT/ks

Appendix D

Approval of UCRIHS

OFFICE OF VICE PRESIDENT FOR RESEARCH
AND DEAN OF THE GRADUATE SCHOOL

EAST LANSING • MICHIGAN • 48824-1046

August 20, 1991

Jerry Nagy
10885 Trapper Lane
Stanwood, MI 49346

RE: COMPARATIVE ANALYSIS OF USER EXPERIENCE WITH CENTRALIZED VS.
DECENTRALIZED MANAGEMENT OF ACADEMIC COMPUTING, ADMINISTRATIVE COMPUTING
AND TELECOMMUNICATIONS FUNCTIONS WITHIN AN INSTITUTION OF HIGHER
EDUCATION, IRB #91-342

Dear Mr. Nagy:

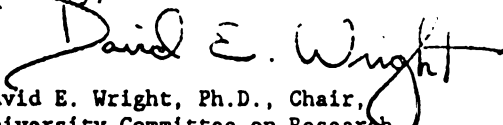
UCRIHS' review of the above referenced project has now been completed. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and the Committee, therefore, approved this project at its meeting on August 20, 1991.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval one month prior to August 20, 1992.

Any changes in procedures involving human subjects must be reviewed by the UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,


David E. Wright, Ph.D., Chair,
University Committee on Research
Involving Human Subjects (UCRIHS)

DEW/deo

cc: Dr. Louis Hekhuis

Appendix E

Introductory Letter

Ferris State University

Information Services
and Telecommunications

March 25, 1991

Mr. Robert Fletcher
Dean of Academic Services
Grand Valley State University
Allendale, MI 49401

Dear Mr. Fletcher:

Many institutions have modified their organizational plans in order to integrate the supervision of information technology resources into a single, centralized organization managed by a Chief Information Officer (CIO). Other institutions have elected to maintain separate, decentralized organizations with individual managers of the functions of voice, data and video communications; academic and administrative computing; and library automation. Please refer to the enclosed questionnaire for a definition of these terms.

I am conducting a study as part of the research required for my Ph.D. program at Michigan State University. The purpose of my research is to determine which management structure of information technology resources produces the highest satisfaction to the users of these functions: a centralized or a decentralized organization. Your institution has been selected as one of 33 schools nationwide to participate in this study. The criteria to select a school for this study included the following: the headcount enrollment of the student body, a public school that is state funded, the number of undergraduate and graduate programs, and the campus size and location.

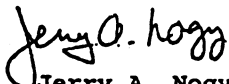
You have been selected to participate due to your position in higher education management. I would greatly appreciate it if you could complete the questionnaire and return it in the postage paid envelope provided. Your participation, while crucial to the success of my study, is voluntary.

The information you supply will be kept strictly confidential. The number on the questionnaire is being used solely to permit a follow up. The number will also be used to contact those respondents who indicate that they are willing to participate in a telephone or personal interview. I will send you a copy of the results of the study if you include your business card when you return the questionnaire.

The attached Ferris Bulldog pin is to thank you for your support. If you have any questions or wish to speak with me personally, I can be reached at (616) 592-2144.

Thanks again.

Sincerely,



Jerry A. Nagy
Asst. Vice President

Appendix F

Log of Mailing Activity and Responses

All surveys were mailed on Friday, September 6, 1991.

<u>Respondent Number</u>	<u>Date Returned</u>	<u>First Follow-Up</u>	<u>Second Follow-Up</u>	<u>Summary Requested</u>
1	-	9-27-91	10-16-91	
2	9-12-91	-	-	
3	-	9-27-91	10-16-91	
4	9-26-91	-	-	
5	-	9-27-91	10-16-91	
6	9-25-91	-	-	
7	9-12-91	-	-	
8	9-25-91	-	-	
9	9-11-91	-	-	
10	9-12-91	-	-	
11	-	9-27-91	10-16-91	
12	9-16-91	-	-	
13	-	9-27-91	10-16-91	
14	9-26-91	-	-	yes
15	-	9-27-91	10-16-91	
16	9-16-91	-	-	
17	9-16-91	-	-	
18	-	9-27-91	10-16-91	
19	9-16-91	-	-	
20	9-16-91	-	-	
21	-	9-27-91	10-16-91	
22	9-16-91	-	-	
23	9-16-91	-	-	yes
24	-	9-27-91	10-16-91	
25	9-18-91	-	-	

<u>Respondent Number</u>	<u>Date Returned</u>	<u>First Follow-Up</u>	<u>Second Follow-Up</u>	<u>Summary Requested</u>
26	-	9-27-91	10-16-91	
27	9-16-91	-	-	
28	9-16-91	-	-	
29	10-29-91	9-27-91	10-16-91	
30	9-16-91	-	-	
31	9-16-91	-	-	
32	9-23-91	-	-	
33	9-23-91	-	-	
34	9-13-91	-	-	
35	9-19-91	-	-	
36	9-16-91	-	-	yes
37	-	9-27-91	10-16-91	
38	10-10-91	9-27-91	-	
39	10-10-91	9-27-91	-	
40	9-13-91	9-27-91	10-16-91	
41	-	9-27-91	10-16-91	
42	-	9-27-91	10-16-91	
43	9-16-91	-	-	
44	-	9-27-91	10-16-91	
45	-	9-27-91	10-17-91	
46	-	9-27-91	10-17-91	
47	-	9-27-91	10-17-91	
48	9-16-91	-	-	
49	-	9-27-91	10-17-91	
50	9-20-91	9-27-91	10-17-91	
51	-	9-27-91	10-17-91	

<u>Respondent Number</u>	<u>Date Returned</u>	<u>First Follow-Up</u>	<u>Second Follow-Up</u>	<u>Summary Requested</u>
52	-	9-27-91	10-17-91	
53	9-13-91	9-27-91	10-17-91	yes
54	9-16-91	-	-	yes
55	-	9-27-91	10-17-91	
56	-	9-27-91	10-17-91	
57	9-16-91	-	-	yes
58	9-13-91	-	-	yes
59	9-23-91	-	-	yes
60	9-23-91	-	-	
61	-	9-27-91	10-17-91	
62	9-13-91	-	-	yes
63	9-30-91	9-27-91	-	yes
64	-	9-27-91	10-17-91	
65	-	9-27-91	10-17-91	
66	-	9-27-91	10-17-91	
67	9-30-91	9-27-91	-	yes
68	-	9-27-91	10-17-91	
69	-	9-27-91	10-17-91	
70	-	9-27-91	10-17-91	
71	-	9-27-91	10-17-91	
72	-	9-27-91	10-17-91	
73	-	9-27-91	10-17-91	
74	9-16-91	-	-	yes
75	-	9-27-91	-	
76	-	9-27-91	-	
77	10-04-91	9-27-91	-	yes

<u>Respondent Number</u>	<u>Date Returned</u>	<u>First Follow-Up</u>	<u>Second Follow-Up</u>	<u>Summary Requested</u>
78	-	9-27-91	10-18-91	
79	-	9-27-91	10-18-91	
80	-	9-27-91	10-18-91	
81	-	9-27-91	10-18-91	
82	-	9-27-91	10-18-91	
83	-	9-27-91	10-18-91	
84	-	9-27-91	10-18-91	
85	-	9-27-91	10-18-91	
86	-	9-27-91	10-18-91	
87	-	9-27-91	10-18-91	
88	-	9-27-91	10-18-91	
89	9-17-91	-	-	
90	9-16-91	-	-	
91	9-12-91	-	-	
92	9-16-91	-	-	
93	-	9-27-91	10-18-91	
94	9-16-91	-	-	
95	9-16-91	-	-	
96	-	9-27-91	10-18-91	
97	9-16-91	-	-	
98	9-13-91	-	-	
99	-	9-27-91	10-18-91	
100	-	9-27-91	10-18-91	
101	9-16-91	-	-	
102	10-03-91	9-27-91	-	

<u>Respondent Number</u>	<u>Date Returned</u>	<u>First Follow-Up</u>	<u>Second Follow-Up</u>	<u>Summary Requested</u>
103	9-20-91	-	-	
104	-	9-27-91	10-18-91	
105	10-21-91	9-27-91	10-21-91	
106	-	9-27-91	10-21-91	
107	9-13-91	-	-	yes
108	-	9-27-91	10-21-91	
109	-	9-27-91	10-21-91	
110	9-19-91	-	-	
111	-	9-27-91	10-21-91	
112	9-26-91	-	-	
113	-	9-27-91	10-21-91	
114	9-19-91	-	-	yes
115	9-23-91	-	-	
116	-	9-27-91	10-21-91	
117	-	9-27-91	10-21-91	
118	-	9-27-91	10-21-91	
119	9-20-91	-	-	
120	10-21-91	9-27-91	10-21-91	
121	9-16-91	-	-	
122	-	9-27-91	10-21-91	
123	10-21-91	9-27-91	10-21-91	yes
124	9-13-91	-	-	
125	9-13-91	-	-	yes
126	-	9-27-91	10-21-91	
127	9-26-91	-	-	

<u>Respondent Number</u>	<u>Date Returned</u>	<u>First Follow-Up</u>	<u>Second Follow-Up</u>	<u>Summary Requested</u>
128	10-02-91	9-27-91	-	
129	9-20-91	-	-	
130	-	9-27-91	10-21-91	
131	9-13-91	-	-	
132	9-23-91	-	-	
133	-	9-27-91	10-21-91	
134	-	9-27-91	10-21-91	
135	-	9-27-91	10-21-91	
136	9-16-91	-	-	
137	9-12-91	-	-	
138	-	9-27-91	10-22-91	
139	-	9-27-91	10-22-91	
140	-	9-27-91	10-22-91	
141	9-30-91	9-27-91	-	
142	9-30-91	9-27-91	-	
143	10-03-91	9-27-91	-	
144	-	9-27-91	10-22-91	
145	-	9-27-91	10-22-91	
146	9-13-91	-	-	
147	9-12-91	-	-	
148	9-24-91	-	-	
149	-	9-27-91	10-22-91	
150	11-08-91	9-27-91	10-22-91	yes
151	9-23-91	-	-	
152	-	9-27-91	10-22-91	

<u>Respondent Number</u>	<u>Date Returned</u>	<u>First Follow-Up</u>	<u>Second Follow-Up</u>	<u>Summary Requested</u>
153	10-15-91	9-27-91	-	
154	-	9-27-91	10-22-91	
155	-	9-27-91	10-22-91	
156	9-12-91	-	-	
157	9-16-91	-	-	
158	-	9-27-91	10-22-91	
159	9-19-91	-	-	
160	9-13-91	-	-	
161	10-14-91	9-27-91	-	
162	-	9-27-91	10-22-91	
163	-	9-27-91	10-22-91	
164	9-16-91	-	-	
165	10-08-91	9-27-91	-	
166	9-20-91	-	-	
167	9-16-91	-	-	
168	-	9-27-91	10-22-91	
169	9-19-91	-	-	yes
170	-	9-27-91	10-22-91	
171	9-13-91	-	-	
172	10-14-91	-	-	
173	-	9-27-91	10-22-91	
174	9-16-91	-	-	
175	10-08-91	-	-	yes
176	9-20-91	-	-	
177	-	9-27-91	10-22-91	

<u>Respondent Number</u>	<u>Date Returned</u>	<u>First Follow-Up</u>	<u>Second Follow-Up</u>	<u>Summary Requested</u>
178	9-13-91	-	-	yes
179	9-16-91	-	-	yes
180	-	9-27-91	10-23-91	
181	-	9-27-91	10-23-91	
182	9-20-91	-	-	
183	10-11-91	-	-	
184	10-11-91	-	-	yes
185	-	9-27-91	10-23-91	
186	9-16-91	-	-	
187	9-24-91	-	-	
188	-	9-27-91	10-23-91	
189	-	9-27-91	10-23-91	
190	9-13-91	-	-	
191	10-07-91	-	-	
192	-	9-27-91	10-23-91	
193	9-26-91	-	-	yes
194	-	9-27-91	10-23-91	
195	-	9-27-91	10-23-91	
196	10-08-91	9-27-91	-	
197	9-16-91	-	-	
198	-	9-27-91	10-23-91	
199	9-16-91	-	-	
200	9-13-91	-	-	
201	-	9-27-91	10-23-91	
202	9-27-91	9-27-91	-	

<u>Respondent Number</u>	<u>Date Returned</u>	<u>First Follow-Up</u>	<u>Second Follow-Up</u>	<u>Summary Requested</u>
203	9-13-91	-	-	yes
204	-	9-27-91	10-23-91	
205	-	9-27-91	10-23-91	
206	9-13-91	-	-	
207	-	9-27-91	10-23-91	
208	9-13-91	-	-	
209	9-16-91	-	-	
210	10-04-91	9-27-91	-	
211	9-16-91	-	-	
212	-	9-27-91	10-23-91	
213	9-16-91	-	-	
214	9-23-91	-	-	yes
215	-	9-27-91	10-23-91	
216	9-16-91	-	-	
217	9-13-91	-	-	
218	-	9-27-91	10-23-91	
219	10-01-91	9-27-91	-	
220	9-19-91	-	-	
221	-	9-27-91	10-23-91	
222	9-18-91	-	-	
223	-	9-27-91	10-24-91	
224	9-11-91	-	-	
225	-	9-27-91	10-24-91	
226	-	9-27-91	10-24-91	
227	9-24-91	-	-	

<u>Respondent Number</u>	<u>Date Returned</u>	<u>First Follow-Up</u>	<u>Second Follow-Up</u>	<u>Summary Requested</u>
228	-	9-27-91	10-24-91	
229	9-16-91	-	-	
230	9-27-91	9-27-91	-	yes
231	-	9-27-91	10-24-91	
232	9-16-91	-	-	
233	10-08-91	9-27-91	-	
234	-	9-27-91	10-24-91	
235	-	9-27-91	10-24-91	
236	9-19-91	-	-	
237	9-27-91	9-27-91	-	yes
238	-	9-27-91	10-24-91	
239	9-27-91	9-27-91	-	
240	11-11-91	9-27-91	10-24-91	
241	9-13-91	-	-	
242	9-16-91	-	-	yes
243	-	9-27-91	10-24-91	
244	9-19-91	-	-	yes
245	9-13-91	-	-	
246	9-16-91	-	-	
247	9-17-91	-	-	yes
248	-	9-27-91	10-24-91	
249	9-13-91	-	-	
250	9-13-91	-	-	yes

Appendix G

Postcard Reminder

Jerry Nogy
Assistant V.P.
Info Services & Telecomm.
Ferris State University
Big Rapids, MI 49307



Dr. John Smith
Dean, College of Education
State University
Anytown, CA 92708

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Dear Dr. Smith,

Have you completed and returned the brief survey that asks about your satisfaction with the service provided by the management of computing and communications functions at your university? If you have, thanks very much for your participation. If you have not, may I urge you to do so in order that I have the best possible representation of user experiences with these functions.

Sincerely,

Jerry Nogy
Assistant VP
Info Services & Telecomm.

Appendix H

Summary Request Thank You Letter

Ferris State University

Information Services
and Telecommunications

February 17, 1992

Dr. Glenn Hansen
Dean, Continuing Education and Special Programs
University of Northern Iowa
Cedar Falls, IA 50614

Dear Dr. Hansen,

Thank you very much for taking the time to respond to my survey request. I appreciate your help very much.

Enclosed is a copy of the survey findings along with another copy of the survey questionnaire.

Thanks again.

Sincerely,


Jerry Noggy

Appendix I

Tabulated Survey Data

Table I.1 -- Comparison of Management Styles

Management Style	Decentralized Managers									
	CIO Freq PCT	Communication				Computing			Library	
		Voice Freq PCT	Data Freq PCT	Video Freq PCT	Academic Freq PCT	Administrative Freq PCT	Automation Freq PCT			
o Autocratic	11 15.3	21 29.6	11 15.5	7 9.9	6 8.5	11 15.5	9 12.9			
o Consultative	29 40.3	27 38.0	25 35.2	23 32.4	23 32.4	29 40.8	28 40.0			
o Participative	31 43.1	14 19.7	24 33.8	29 40.8	26 36.6	18 25.4	30 42.9			
o Democratic	0 0	3 4.2	3 4.2	7 9.9	4 5.6	6 8.5	2 2.9			
o Passive	1 1.4	6 8.5	8 11.3	5 7.0	12 16.9	7 9.9	1 1.4			
TOTAL	72 100.0	71 100.0	71 100.0	71 100.0	71 100.0	71 100.0	70 100.0	70 100.0		

Table I.2 -- Level of Satisfaction with Service Provided

MANOVA: Wilks' lambda=.93677 F=1.24873 p=.287

	Level of Satisfaction						
	Not Satisfied 1	Somewhat Satisfied 2	Satisfied 3	Mostly Satisfied 4	Very Satisfied 5	Mean	
Voice Communication CIO Decentralized	Freq 5 PCT 7.5 5 7.1	Freq 15 PCT 22.4 11 15.7	Freq 14 PCT 20.9 19 27.1	Freq 21 PCT 31.3 22 31.4	Freq 12 PCT 17.9 13 18.6	3.3 3.4	
Data Communication CIO Decentralized	3 4.3 3 4.5	7 10.0 6 9.0	23 32.9 23 34.3	26 38.8 29 41.4	8 11.4 9 13.4	3.4 3.5	
Video Communication CIO Decentralized	6 9.2 1 1.6	9 13.8 4 6.3	28 43.1 29 46.0	20 30.8 23 36.5	2 3.1 6 9.5	3.0 3.5	
Academic Computing CIO Decentralized	8 11.8 4 5.8	12 17.6 11 15.9	17 25.0 18 26.1	23 33.8 23 33.3	8 11.8 13 18.8	3.1 3.4	
Administrative Computing CIO Decentralized	7 10.0 3 4.2	12 17.1 14 19.7	18 25.7 17 23.9	19 27.1 28 39.4	14 20.0 9 12.7	3.3 3.4	
Library Automation CIO Decentralized	3 4.5 2 2.9	9 13.4 10 14.5	20 29.9 14 20.3	21 31.3 21 30.4	14 20.9 22 31.9	3.5 3.7	

Table I.3 -- Most Satisfactory Service Provided

	Communication					
	Voice Freq PCT		Data Freq PCT		Video Freq PCT	
CIO	9	15.5	4	6.9	5	8.6
Decentralized	13	23.2	5	8.9	3	5.4

	Computing				Library Automation	
	Academic Freq PCT		Administrative Freq PCT		Freq	PCT
CIO	8	13.8	18	31.0	14	24.1
Decentralized	8	14.3	13	23.2	14	25.0

Table I.4 -- Least Satisfactory Service Provided

	Communication					
	Voice Freq PCT		Data Freq PCT		Video Freq PCT	
CIO	12	21.4	6	10.7	15	26.8
Decentralized	14	26.9	3	5.8	7	13.5

	Computing				Library Automation	
	Academic Freq PCT		Administrative Freq PCT		Freq	PCT
CIO	15	26.8	6	10.7	2	3.6
Decentralized	8	15.4	12	23.1	8	15.4

Table I.5 -- Level of Satisfaction with Current and Future Budget Planning

MANOVA: Wilks' lambda=.97628 F=.43336 p=.855

	Not Satisfied		Somewhat Satisfied		Satisfied		Mostly Satisfied		Very Satisfied		Mean
	Freq	PCT	Freq	PCT	Freq	PCT	Freq	PCT	Freq	PCT	
Voice Communication CIO Decentralized	12 10	19.7 15.4	11 11	18.0 16.9	17 21	27.9 32.3	10 15	16.4 23.1	11 8	18.0 12.3	2.9 3.0
Data Communication CIO Decentralized	4 5	6.5 7.8	10 17	16.1 26.6	25 18	40.3 28.1	19 19	30.6 29.7	4 5	6.5 7.8	3.1 3.0
Video Communication CIO Decentralized	7 6	11.7 9.8	13 13	21.7 21.3	26 24	43.3 39.3	12 14	20.0 23.0	2 4	3.3 6.6	2.8 2.9
Academic Computing CIO Decentralized	7 8	11.3 12.7	14 14	22.6 22.2	23 18	37.1 28.6	14 14	22.6 22.2	4 9	6.5 14.3	2.9 3.0
Administrative Computing CIO Decentralized	11 6	17.5 9.2	10 16	15.9 24.6	18 19	28.6 29.2	19 18	30.2 27.7	5 6	7.9 9.2	2.9 3.0
Library Automation CIO Decentralized	3 5	5.0 7.7	12 13	20.0 20.0	24 18	40.0 27.7	14 20	23.3 30.8	7 9	11.7 13.8	3.1 3.2

Table I.6 -- Most Satisfactory Budget Planning

	Communication					
	Voice Freq PCT		Data Freq PCT		Video Freq PCT	
CIO	11	22.9	4	8.3	2	4.2
Decentralized	14	29.2	6	12.5	-	-

	Computing				Library Automation	
	Academic Freq PCT		Administrative Freq PCT		Freq	PCT
CIO	9	18.8	9	18.8	13	27.1
Decentralized	8	16.6	6	12.5	14	29.2

Table I.7 -- Least Satisfactory Budget Planning

	Communication					
	Voice Freq PCT		Data Freq PCT		Video Freq PCT	
CIO	6	14.3	2	4.8	10	23.8
Decentralized	11	23.4	4	8.5	10	21.3

	Computing				Library Automation	
	Academic Freq PCT		Administrative Freq PCT		Freq	PCT
CIO	10	23.8	8	19.0	6	14.3
Decentralized	7	14.9	8	17.0	7	14.9

Table I.8 -- Level of Satisfaction with access by students, faculty and staff to voice, data and video resources

MANOVA: Wilks' lambda=.99594 F=.18481 p=.907

	Not Satisfied		Somewhat Satisfied		Satisfied		Mostly Satisfied		Very Satisfied		Mean	
	Freq	PCT	Freq	PCT	Freq	PCT	Freq	PCT	Freq	PCT		
Student Access CIO Decentralized	7 5	9.9 7.1	11 13	15.5 18.6	26 17	36.6 24.3	22 30	31.0 42.9	5 5	7.0 7.1	3.0 3.2	
Faculty Access CIO Decentralized	4 3	5.6 4.3	12 11	16.9 15.9	23 23	32.4 33.3	26 23	36.6 33.3	6 9	8.5 13.0	3.2 3.3	
Staff Access CIO Decentralized	6 2	8.5 2.9	10 16	14.1 22.9	19 14	26.8 20.0	30 32	42.3 45.7	6 6	8.5 8.6	3.2 3.3	

Table I.9 -- Most Satisfactory Access

		Student Access			
		Freq	PCT		
CIO Decentralized		13	29.5		
		14	26.4		

		Faculty Access		Staff Access	
		Freq	PCT	Freq	PCT
CIO Decentralized		16	36.4	15	34.1
		17	32.1	22	41.5

Table I.10 -- Least Satisfactory Access to Voice, Data, and Video Resources

		Student Access			
		Freq	PCT		
CIO Decentralized		18	40.0		
		27	55.1		

		Faculty Access		Staff Access	
		Freq	PCT	Freq	PCT
CIO Decentralized		15	33.3	12	26.7
		14	28.6	8	16.3

Table I.11 -- Level of Satisfaction with Staff Recruitment and Development

MANOVA: Wilks' lambda=.92193 F=1.31249 p=.259

	Not Satisfied		Somewhat Satisfied		Satisfied		Mostly Satisfied		Very Satisfied		Mean	
	Freq	PCT	Freq	PCT	Freq	PCT	Freq	PCT	Freq	PCT		
Voice Communication CIO Decentralized	4	7.4	9	16.7	22	40.7	15	27.8	4	7.4	3.1	
	2	3.2	15	24.2	24	38.7	14	22.6	7	11.3	3.1	
Data Communication CIO Decentralized	4	7.3	5	9.1	27	49.1	12	21.8	7	12.7	3.2	
	-	-	13	20.6	21	33.3	22	34.9	7	11.1	3.3	
Video Communication CIO Decentralized	7	13.5	9	17.3	23	44.2	7	13.5	6	11.5	2.9	
	1	1.6	10	16.4	25	41.0	18	29.5	7	11.5	3.3	
Academic Computing CIO Decentralized	5	8.6	6	10.3	25	43.1	17	29.3	5	8.6	3.1	
	6	9.4	9	14.1	16	25.0	21	32.8	12	18.8	3.3	
Administrative Computing CIO Decentralized	7	12.3	3	5.3	27	47.4	15	26.3	5	8.8	3.1	
	7	10.9	9	14.1	18	28.1	21	32.8	9	14.1	3.2	
Library Automation CIO Decentralized	2	3.6	8	14.5	23	41.8	15	27.3	7	12.7	3.3	
	2	3.2	5	8.1	30	48.4	12	19.4	13	21.0	3.4	

Table I.12 -- Most Satisfaction with Staff Recruitment and Development

	Communication					
	Voice Freq PCT		Data Freq PCT		Video Freq PCT	
CIO	3	8.6	4	11.4	4	11.4
Decentralized	8	18.6	5	11.6	1	2.3

	Computing				Library Automation	
	Academic Freq PCT		Administrative Freq PCT		Freq	PCT
CIO	4	11.4	9	25.7	11	31.4
Decentralized	8	18.6	5	11.6	16	37.2

Table I.13 -- Least Satisfaction with Staff Recruitment and Development

	Communication					
	Voice Freq PCT		Data Freq PCT		Video Freq PCT	
CIO	8	25.8	3	9.7	4	12.9
Decentralized	14	31.8	3	6.8	5	11.4

	Computing				Library Automation	
	Academic Freq PCT		Administrative Freq PCT		Freq	PCT
CIO	7	22.6	5	16.1	4	12.9
Decentralized	5	11.4	11	25.0	6	13.6

Table I.14 -- Level of Satisfaction with Support of Information Technology Resources

MANOVA: Wilks' lambda=.93922 F=2.76124 p=.045

	Not Satisfied		Somewhat Satisfied		Satisfied		Mostly Satisfied		Very Satisfied		Mean
	Freq	PCT	Freq	PCT	Freq	PCT	Freq	PCT	Freq	PCT	
Instructional Programs CIO Decentralized	8 3	12.1 4.4	18 14	27.3 20.6	21 28	31.8 41.2	16 16	24.2 23.5	3 7	4.5 10.3	2.8 3.1
Faculty Office Automation CIO Decentralized	7 8	10.0 11.8	22 23	31.4 33.8	28 19	40.0 27.9	11 13	15.7 19.1	2 5	2.9 7.4	2.7 2.7
Administrative Office Automation CIO Decentralized	4 4	5.7 5.9	11 18	15.7 26.5	28 18	40.0 26.5	17 23	24.3 33.8	10 5	14.3 7.4	3.2 3.1

Table I.15 -- Most Satisfactory Support of Instructional Programs, Faculty Office Automation, Administrative Office Automation

	Instructional Programs			
	Freq	PCT		
CIO	11	20.8		
Decentralized	16	33.3		

	Faculty Office Automation		Administrative Office Automation	
	Freq	PCT	Freq	PCT
CIO	6	11.3	36	67.9
Decentralized	10	20.8	22	45.8

Table I.16 -- Least Satisfactory Support of Instructional Programs, Faculty Office Automation, Administrative Office Automation

	Instructional Programs			
	Freq	PCT		
CIO	23	46.0		
Decentralized	10	21.7		

	Faculty Office Automation		Administrative Office Automation	
	Freq	PCT	Freq	PCT
CIO	18	36.0	9	18.0
Decentralized	19	41.3	17	37.0

Table I.17 -- CIO Position Titles of Institutions with Centralized Management

	<u>Freq.</u>	<u>PCT</u>
o Director of Computer Services	36	50.0
o Assistant/Associate Vice President of Information Technology	15	20.8
o Academic Dean	5	6.9
o Vice President of Information Technology	<u>16</u>	<u>22.2</u>
Total	72	100.0%

Table I.18 -- Title of Position that CIO Reports to

	<u>Freq.</u>	<u>PCT</u>
o Vice President/Vice Chancellor of Finance/Business Affairs/Administrative Services/Facilities	36	50.0
o Provost	5	6.9
o President/Chancellor	17	23.6
o Vice Chancellor	5	6.9
o Director of Planning/Government Relations/University Advancement	<u>9</u>	<u>12.5</u>
Total	72	100.0%

Table I.19 - Titles of Managers of Decentralized Functions

	Communication			Computing			Library	
	Voice	Data	Video	Academic	Administrative	Automation		
	Freq PCT	Freq PCT	Freq PCT	Freq PCT	Freq PCT	Freq	PCT	
o Director of Purchasing	5 7.0							
o Director of Computer Services	4 5.6	58 81.7		63 88.7	63 88.7			
o Director of Business Services	9 12.7							
o Director of Telephone Operations	41 57.7	7 9.8						
o Director of Physical Plant	8 11.3							
o Vice President of Administrative/Finance	4 5.6							
o Coordinator/Manager/Director of Academic Computing		6 8.5		8 11.3	8 11.3	1 1.4		
o Department Chairperson			5 7.0					
o Director of Media Services			54 76.1					
o Academic Dean			12 16.9					
o Dean/Director of Library						70 98.6		
TOTAL	71 100.0	71 100.0	71 100.0	71 100.0	71 100.0	71 100.0	71 100.0	

Table I.21 - Summary of Management Style

	<u>Autocratic</u>	<u>Consultative</u>	<u>Participative</u>	<u>Democratic</u>	<u>Passive</u>
CIO	15.3%	40.3%	43.1%	0.0%	1.4%
Decentralized Managers for:					
Voice	29.6	38.0	19.7	4.2	8.5
Data	15.5	35.2	33.8	4.2	11.3
Video	9.9	32.4	40.8	9.9	7.0
Academic Computing	8.5	32.4	36.6	5.6	16.9
Administrative Computing	15.5	40.8	25.4	8.5	9.9
Library Automation	12.9	40.0	42.9	2.9	1.4

Appendix J

Comments Recorded During Personal Interviews with Respondents

Comments Recorded During
Personal Interviews with Respondents

Comments from Schools with a Centralized Management
Structure

A dean at a southern university stated:

"We are just beginning an integrative process on campus. There are still some problems among units that are going through this consolidation. Basically a faculty/administrative study committee recommended the changes because of two reasons: 1) the need to plan for efficient and economical networks to function throughout the campus and look to the future as an integrated organization 2) the need to support end-user services. We hope to see the effects of these recommendations soon."

A vice president at an eastern university commented.

"We recognized the need for the whole range of information resources to be under a unified administrative structure but perhaps our expectations were too high. Given time I believe the kinks will be worked out of the system and we will get better results."

A director of admissions at a southern university stated:

"Our current centrally operated system is definitely working better than our old decentralized approach. Perhaps we've become more demanding as users and less tolerant of service glitches."

A vice president at a western university stated:

"The CIO of our school is a political appointee and shows it. We would be better off if we returned to our decentralized approach with more coordination between units."

A dean of a technical college at a western university was asked why the respondents from his institution rated their CIO as only "satisfactory" or "mostly satisfied". He replied:

"Perhaps our organization doesn't fit a normal CIO model. We have a powerful manager who exerts a great deal of influence in administrative computing but doesn't show a lot of interest in communications."

Comments from Schools with a Decentralized Management Structure

A dean at a mid-west university stated:

"We have separate computing organizations providing resources and services throughout our campus. Our goal is a distributed environment of hardware and software through a high quality communications network. This organization serves us very cost-effectively and efficiently."

A vice president at a southern school said:

"I am a believer in streamlining and centralizing management of similar functions. However, the way in which our campus evolved in its technology development did not allow for such economy and efficiency. Yet, I think "it works" without much duplication. The most annoying factor to me is when "one hand doesn't know what the other is doing". I guess that can happen in the most slick of arrangements, too."

An outspoken dean at an eastern university stated:

"The organization at this university for information technologies is absurd. Key people, who should be working together, are trying to build empires at one another's expense. Huge central staffs are being maintained in the face of burgeoning decentralization. Worst of all, Academic Affairs is at the mercy of two non-Academic Affairs V.P.'s who are in charge of most of what Academic Affairs needs."

A director in the business operation at a mid-west school said:

"They certainly all need to work together and our decentralized system has tried to develop ways to coordinate; it takes the right people regardless of the organizational chart. They have to have the university's goal first."

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