CENTER FOR INFORMATION SYSTEMS RESEARCH
SLOAN SCHOOL OF MANAGEMENT
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Statement of Purpose and Structure

CISR No. 1
Summer 1980

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INTRODUCTION

The Center for Information Systems Research (CISR) was established at the MIT Sloan School of Management in June 1974 for two major reasons. First, there was a recognition by the School of the increasing complexity of the managerial function today with a concomitant need for vastly improved information processing tools and techniques to carry out this job. Second, there was an evident need to institute more effective relationships between academics and private and public sector managers in a joint effort to improve computer-based information systems. These two purposes continue to be relevant.

In the private sector the successful operation of a firm is increasingly dependent on timely information; in the service industries the product provided either is information itself or is integrally tied to information; and in the public sector a major basis for effective policy analysis and decision-making is information. Domestic and international competition, inflation, and the increasing costs of capital and labor underline the need for more effective use of available information to facilitate improved planning and control of an organization's activities and assets.

The basic tool for helping managers with their information problems is the computer. The widespread and growing need to process information effectively for managerial decision-making and the control of operations was an impetus for the formation of CISR. Our primary focus is thus on computer-based information systems within the context of effective and efficient management.

Several factors combine to suggest that the role of computers as a management tool can be expected to expand in the future. Among these factors are the increasing cost-effectiveness of traditional computer hardware, the availability of mini-computers and micro-computers, the profusion of packaged software, an enlarged awareness of means of data analysis and presentation, and growing experience on the part of many organizations in the management of systems development and implementation.

The rapid flow of new hardware, software, and managerial techniques into the field provides a great opportunity for more effective use of information systems at this time. The deluge of new systems and new knowledge has also led to increased complexity in the field. It is this combination of opportunity and complexity which has highlighted a large number of unresolved questions as critical issues to be addressed by information systems research today. These questions require the perspectives of a broad range of disciplines, as well as input from organizations utilizing information systems.

PURPOSE

The Center for Information Systems Research was established at the MIT Sloan School of Management to define, research, and report on significant managerial issues in the utilization of computer-based information systems. In summary, the Center was created:

- To respond to a perceived need for objective, management-oriented research on computer-based information systems.
- To perform applied research for which it is thought a "near-term" (one to five year) payoff is possible on problems suggested by, and therefore of interest to, managers concerned with computer-based information systems.
- To establish and facilitate a multidisciplinary approach to the multidimensional information systems problems which exist today.
- To research information systems problems in both the public and private sectors.
- To operate under a carefully designed organization structure which will maximize research output and facilitate the production of relevant solutions to the information systems problems considered to be most significant by managers and researchers.
- To provide a research environment for MIT students that gives them opportunities to work with faculty and managers on issues important to industry.
- To provide a forum where managers from diverse organizations may meet and exchange ideas with each other and with the CISR faculty and staff.
- To disseminate significant research findings to the information systems user community.
- To expand financial support for research in the MIS area at the Sloan School.

ORGANIZATIONAL STRUCTURE

CISR provides the setting for faculty and others with diverse perspectives to focus on specific issues concerning information systems. Involved with CISR are specialists in computer hardware and software, management planning and control, management science, and organizational behavior. Research project teams are constructed from these specialists and supplemented with MIT students.

Even though the Center is a group within the Sloan School, faculty, staff and students from other departments at the Institute who are interested in the problems being addressed by the Center are, at times, involved in CISR projects. Within the Sloan School, the Center is closely tied to the Management Science Group, another interdisciplinary organization.

To ensure that this multi-disciplinary approach deals with managerially relevant research issues, we realize that the driving force behind the criteria for choice of projects and approaches cannot solely be the desires of researchers, but must be heavily oriented toward the needs of managers. To ensure responsiveness to managerial needs, CISR has institutionalized strong links with a group of sponsoring organizations; this plays a key role in influencing and assigning priorities to research choices.

In addition, we recognize that the faculty and students can deliver higher quality, more effective and timely research results in this field with the assistance of capable research staff. At MIT, it is firmly believed that full-time professionals, who are independent of classroom teaching and are supported entirely from research funds, are an important factor in maintaining research viability.

Thus, CISR's organizational structure has been developed to promote both external sponsor involvement and the inclusion of professional staff. The Center includes the following components:

CISR Participating Sponsors

A limited number of organizations which, being in agreement with the objectives, goals, and philosophy of the Center, contribute to its funding and provide assistance in defining and investigating significant research issues. Section VII contains a detailed description of the role of Participating Sponsors.

Faculty

The Director of CISR is a senior faculty member in the Sloan School's MIS group and devotes at least half of his time to CISR's activities. The other members of the MIS faculty form CISR's core faculty. The Center's associated faculty consists of members of other MIT departments who are actively involved in CISR research. Each CISR research project has a faculty member as its Principal Investigator.

Research Staff

In addition to faculty members, those who actively participate in CISR research projects come from the following four groups:

Full-time staff—professionals who devote all their efforts to CISR activities and research, with primary responsibilities for project management. The Assistant Director of CISR is a full-time, research staff position.

Part-time staff—professionals who are actively involved with a particular CISR research project, but who have only a part-time appointment.

Students—Undergraduate, Masters, or Doctoral candidates who are working under the direction of the faculty on a particular research project; students are often actively involved in the data collection and analysis phases of projects.

CISR Fellows—members of our Participating Sponsors on leave from their organizations in order to devote time to a research project of mutual interest to CISR and the sponsor. (Section VIII has more information about the role of CISR Fellows.)

Administrative Staff

Responsible for secretarial support, financial accounting, office administration, and conference administration.

MAJOR RESEARCH AREAS

Given CISR's objective of performing managerially relevant research in the information systems field, the areas selected for research span a wide spectrum of issues from a primarily "human" focus (e.g., implementation problems) to essentially "technical" problems (e.g., data base design).

From a general perspective, CISR's research portfolio can be divided into four major categories.

1. Managerial Use of Computers and Computer-Based Information

The development of concepts and methods to aid managers and staff professionals to identify their information needs and to interact with computer-based information systems is a traditional area of research for the Sloan School. For example, faculty have long worked in the area of decision support systems (DSS). Continuing DSS research is aimed at improved understanding of how best to develop and implement these systems. An additional focus is the issue of how DSS systems are justified. Research underway has developed the "critical success factors" method to aid managers in identifying their information needs. Other research is exploring various approaches to providing end users with software tools so they can do their own development/programming and is investigating the managerial and organizational implications of this phenomenon of end user behavior.

2. Information Systems Technology

Research with major emphasis on technology has also been a tradition at the Sloan School. The overriding purpose of many such projects has been to understand the technologies that can be brought to bear on implementing the systems dictated by managerial needs and, thus, help to close the increasing gap between the technologies themselves and the understanding required to use them effectively. One major study underway is aimed at improving methods of allowing multiple processing units to communicate with multiple storage devices. New computer architectures to provide more efficient and effective processing in a heavily distributed world are being studied. Research is also underway on data base design, including questions of the value of redundant data and the affects of different data base structures.

3. Information Systems Productivity

There are two aspects to the issue of productivity: (1) how computer-based systems can be used to increase the productivity of an organization, particularly of its managers and staff professionals, and (2) how productivity of the systems development process can be improved. The first aspect heavily overlaps the research category described previously as "the managerial use of computers and computer-based information." Research addressing the second aspect includes several current projects. Major work is being done on the development of systems design processes. Some of the newer productivity tools, including structured systems analysis techniques, are being investigated. The pros and cons of "common systems" was the topic of a recent CISR Endicott House Seminar. In addition, a major study of the software industry was recently begun which draws upon, and encompasses, much of the above.

4. Management of the Information Systems Function

Since the advent of commercial data processing, the DP department has moved from being a peripheral group, performing accounting tasks faster and cheaper, to being a central resource for operations and, increasingly, for managerial decision-making. A major aim is to understand what the roles and organizational structures of information systems departments should be in this new era. Studies are underway concerning careers of data processing professionals and how successful information systems executives manage. Information systems planning is another area CISR is investigating. This is closely related to the data on planning coming out of the managerial support research described in the first category. In addition, a large-scale study of end user needs and viewpoints has shed much light on a range of issues concerning managing the information systems function.

DISSEMINATION OF RESULTS

General dissemination of research results is made to the information systems user community through journal articles and participation in national conferences. In addition, results are communicated through the following media:

CISR Working Paper Series

A sub-series of the Sloan School Working Paper Series; these reports are in effect unrefereed releases of insights and progress reports on projects and program areas under investigation.

CISR Summer Session Conference

A "research results" seminar held annually and conducted by the entire CISR faculty and research staff; limited to a moderate number of attendees, the Summer Session is open to the general business community with preferential access given to members of CISR's Participating Sponsors.

Endicott House Seminars

Two-and-a-half day discussions on a single topic of significance to managers in the information systems area, focusing on actual practice as presented by participants. These seminars are held twice a year and are limited to a small number of invited attendees.

One-day Seminars

Day long seminars giving the participants an opportunity to absorb and delve into a particular CISR research project in depth. These seminars are limited to a small number of invited attendees.

Annual Report

During the fall semester, CISR produces an Annual Report describing the preceding academic year. This report contains descriptions of current research projects, biographies of faculty and staff, and a list of sponsoring organizations.

RESEARCH PROJECT FUNDING

Financial support of CISR research comes primarily from research grants which are either unrestricted or directed.

The main source of CISR's funding is the annual subscriptions from the Participating Sponsors. These are unrestricted funds and provide the means to launch many of CISR's research projects and to support the continuity of the Center. While usual MIT accounting procedures apply to Participating Sponsor grants, there is no individual accounting to the sponsors for the disposition of their particular contribution.

CISR from time to time solicits or accepts contracts for directed research. The sponsors of such research negotiate the terms of the contract through MIT's Office of Sponsored Programs. While CISR may accept requirements for confidentiality of designated data, neither the existence of such a contractual relationship nor the general nature of the research and the results can be kept confidential. Theses and research papers resulting from involvement in directed research of this nature continue to be subject to normal MIT quality control and ownership regulations but are submitted to the sponsoring organizations for verification that confidential material covered by the contract has been properly safeguarded.

Most directed research grants are made by government or large private organizations and call for work on well-defined problems within specified time frames. The motivation for undertaking directed research through CISR is that the work itself is too specific or too costly to qualify for support from unrestricted grants. Such projects, however, support other or subsequent CISR research efforts by permitting the acquisition of skills and experience which are broadly applicable.