MANAGEMENT INFORMATION SYSTEMS - A TOTAL APPROACH

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ABSTRACT

This paper describes a different approach to the design and implementation of Management Information Systems which has proven successful in government and business. The approach stresses the need for analysis of clerical systems in the design stages. Cost effectiveness is illustrated by efficient use of all information technologies such as micrographics, word processing, forms design, data processing and library resources.

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Management Information Systems in today's society is a household word however, its success rate is not very high. Although, the MIS concept is logical in theory, I shall attempt to highlight why MIS in its current philosophy is doomed. This paper is not intended to acquaint you with the information technology available. I intend to illustrate the missing links in the design and implementation of MIS. Common sense is simplistic as a result we often overlook the obvious. A new trend is emerging whereby information specialists are grouped organizationally as evidenced in the Xerox Corporation and the Alberta Government among others. In keeping with your conference's theme, I shall illustrate how information can be shared as a resource more effectively. If MIS utilizes the various media, consequently the design and operational costs will be less. I would like to stress the importance of clerical systems in particular paperwork systems and its impact on MIS if it is ignored.

Let's discuss how MIS gets off on the wrong foot. The books tell you to survey all your present or prospective users of computerized information and record all their objectives and needs on a short, intermediate and long range basis. If you follow this method, you shall lapse into inactivity because you will be at a loss where to start. This approach encourages the search for new hardware or software breakthrough that will make the task of MIS development one of pushing a few buttons. Proponents of revelation are looking for the next generation of computers with multi-mega bytes of memory storage, with time sharing access on CRT and with large data base management systems that can handle all the data needs of every prospective user, five or more years from now.

As we research articles and books on MIS, we read methods on how our data processing group can assist managers in developing a sound information system which will improve the decision-making process. I would like to suggest that Management Information Systems designed solely on an automated data base is doomed. The interface with all the data resources is a necessary ingredient to enable management to tap all data bases available to the organization. Data processing, micrographics, filing systems, libraries, word processing and archives are resources established for that purpose. Furthermore, if we analyse the lack of perfection in our MIS, we shall detect many problems at the source data level where we find a collection of clerical systems. It is wrong to assume that we can leap over the clerical systems into any automated system.

In recent years, the system concept and its major practitioner, the systems analyst have become integral parts of the business world. Unfortunately, many people relate systems solely to computer operations and never really understand what is meant by an information system. System refers to a complex mixture of people, machines, space, furniture,

time, organization, forms and other diverse elements that are combined to function in unison toward the achievement of an objective of the organization.

Let's examine some of the missing links in MIS as it is presently visualized. Paperwork has become a major characteristic of business and government. Despite this, few executives voice much concern for the clerical operations conducted within their organizations. Few seem to recognize that if an organization's paperwork foundations are weak the entire structure can crumble. Similarly, the same will happen to MIS if attention is not given to source data which originates from our clerical systems. Failures are not blamed on poor clerical operations instead it is poor cash flow, computer problems, costly operations, poor service and management errors.

Data contained in abstracts and vertical files stored in libraries, data contained on forms, information embedded in reports are all vehicles which should be integrated into our MIS. We cannot ignore in systems design, that paperwork communicates information on every transaction that takes place in every facet of an organization's activities. It is an information pipeline, funneling to executives, managers and workers the data they need to take actions or to make decisions and make plans. A blocked pipeline, or one filled with incorrect data, can threaten the life of the organization it was designed to nurture, just as a blocked artery can cause heart failure and end a human life.

How can anyone expect the executives of an organization to make decisions and plans based on information they receive if the people who are preparing the reports don't really know what information is vital because they do not know what the goals are?

Most clerical work relates to transactions that should ultimately be reflected in critical reports to management. Have you ever heard of one who does not cause information to be entered on forms and records?

To make paperwork more effective, it must be recognized for what it is: the processing of data and communication of information.

Let's examine two major types of information systems:

a) operating information
b) management information

Order, shipping, payroll and production information are examples of operating information. Management information is the kind used in planning and decision-making. Its purpose is generally to describe current status of an organization's activities to provide a basis for decisions that may have both short-term and long range effects on the organization's operations.

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As we are all aware, one of the fundamentals of systems design is work simplication so why don't we apply the following principles to the design of MIS:

a) eliminate unnecessary activities
b) combine necessary activities
c) change sequence of steps in a procedure to facilitate processing
d) mechanize or computerize activities when feasible

The next step is evaluating the system to verify its effectiveness measured against its objectives which should be in any aspect of information processing:

a) timeliness of output receipt by user
b) accuracy and utility of output
c) cost per unit of output

Since productivity plays an important role in the operation of an information system, we must examine the following functions:

a) recording data
b) manipulating data
c) storing and retrieving data and information
d) receiving or supplying data and information

Since we extract data from forms for MIS, have we ever asked the following questions:

a) What information must the form contain to satisfy each user's real needs?
b) How simple is the form to complete?
c) How will information be entered and in what sequence?
d) Who will process, refer, file forms?
e) Who else will receive copies?

Can microfilm storage and retrieval devices form the basis of our MIS? How much data used in MIS is in COM format? The sophistication of micrographics systems using blip codes, binary codes, computer assisted retrieval, should be incorporated or considered in the design of MIS.

Can we access our filing systems and technical reports? I suggest we can be incorporating indices to filing systems and abstracts of technical reports into MIS which makes MIS interdependent on other data bases in the organization. Often management needs to refer to details in operating information systems before making a final decision.

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Common sense dictates that the computer will continue to control MIS and the magnetic media should be the data base used in MIS however, the purpose of this paper is to explain how the main data base can be improved to meet the standards expected by management and justifiably so.

The world of MIS is changing. Innovations and inventions in computer technology, telecommunications, circuitry and related fields have meshed. Amidst this technological uproar, the MIS manager must assess the future in a new way. As computer and communication devices and systems permeate all parts of the organization, even interfacing directly with customers, the problems of planning, budgeting and controlling these systems blur in a mist of organization confusion. Only one common element runs through this management maze; it is the data resource, the stuff computers compute, communications devices communicate, word processors process and humans use or misuse. It is to the management of data that the manager must turn his attention. Over the years, the various groups having responsibilities for data processing, reports control, libraries, publications, micrographics, communications and paperwork management have formed spheres of specialties, organized professional societies, developed jargons understandable only to their peers and have adopted all the basic trappings of the specialist. It is data, the raw material, that continues unmanaged, uncontrolled and the subject of today's privacy issues. Thus, a new breed, a generalist emerges and is baptised "Information Manager".

I encourage you to follow in the tracks of organizations such as the Alberta Government and Xerox Corporation by using the following techniques:

a) In the design stage, form a project team which includes a systems analyst, paperwork analyst, micrographic analyst, librarian and a management user.

b) Analyse and improve clerical systems before proceeding to design automated systems.

c) Choose most economical media.

d) Incorporate only essential requirements of user and dispense with desireable features.

e) Perform a cost analysis of each system and compare value and costs with other systems. Submit the analysis to senior management.

In conclusion, I encourage you to use this definition of MIS in establishing or re-designing your genuine Management Information System: a management information system that stores all data needed by the organization in an integrated data base and utilized sophisticated data transmission, and information retrieval techniques to provide the required level of service to all users in the most economic way.