Professional approach to MAS

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Our lives run on information—or so it seems. We are exposed to a continuous stream of new information—through TV, radio, newspapers, periodicals, and other sources. Our memories provide a store of historical information. We are able to retrieve this information from the past, and through our imagination combine it with new information passing by, examine it all for relevancy, and then conceptualize a situation. This process, coupled with judgment, leads to decisions—that is, selection of the course of action to be pursued. Some of us select more effective courses than others because of differing levels of judgment—and some because of the quality of the information at hand.

So it is with business. While businesses involve material, machines, money, and markets, they consist essentially of men—people placed in a stream of information making myriad decisions from it that in the aggregate determine the success of the business. This success in business depends on the quality of the judgment which management applies to information—and the quality of that information.

Perhaps you have never thought of it this way, but the professional accountant is in the “information business.” In our accounting and auditing work we are concerned with information—the proper reporting of a company’s financial position and results of its operations to shareholders, credit grantors, and other third parties. In our tax practice we are concerned with information for determining (and hope-fully minimizing) a taxpayer’s taxable income. In our management advisory services (MAS) we are consultants to clients building information systems. These systems are concerned with all the types of information that confront the management of the institutions in our society—business, government, or whatever.

Only in recent years has management information been viewed as a separate subject, susceptible of study. Now we find the terms “information system,” “management information system—MIS,” “integrated system,” “total system,” and other variations of this theme everywhere we look. Company after company that doesn’t have an adequate information system is seeking to get one.

In our MAS practice at H&S we are heavily involved in developing such systems. We believe—in fact we know—that we are applying some unique approaches in assisting clients to develop them. Some may not be “total systems,” but they are about as nearly “total” as anyone has yet undertaken.
WHAT IS AN INFORMATION SYSTEM?

If you were to ask someone in management to describe his company's management information system, he might point to the computer and say "there is my information system;" or he might refer to management's set of control reports. Still others would be at a loss to respond because they do not see an information system at all. Rather they think in terms of a complex of systems directed to the several purposes of forecasting sales, planning production, costing production, controlling inventories, planning profits and the like. Yet all these systems run on information.

The fact is that every organization has an information system of sorts—it must have one if it is to function at all. The system may not be very effective, and it probably is not viewed as a separate and distinct system—but it is there none the less. How does this come about?

As a business grows from a one-man operation to an enterprise involving a dozen, a hundred, or even thousands of people, the many tasks and the associated decision making must be subdivided and distributed. The result is an organization structure that reflects specialization by function (marketing, production, or accounting) or by geographical areas, or by products, or markets, or by some other characteristic of a business. The information requirements are generally determined job by job, department by department, reflecting what the lower or middle-echelon manager believes he needs to carry out his assigned duties.

So a factory superintendent, for instance, who is charged with producing particular products, determines what he needs to know to do his job and he builds his record systems and operating procedures to provide the information. Similarly, the financial officer assesses his informational needs and builds his record systems and operating procedures. He finds he needs information from the production superintendent on hours worked by plant employees, so he can prepare payrolls, or on number of units produced, so he can cost production and record inventories. Similar relationships hold throughout an entire business.

These systems and procedures are not designed primarily to provide information, although information is an integral part of them. Rather, their main purpose is to get work accomplished—to generate customer orders or manufacture products or pay employees. They have an operating purpose and they may be termed "operating systems." They specify what steps will be taken, how they will be performed and who will perform them. This is how the business is operated.

Any business has a multiplicity of "operating systems" for responding to a multiplicity of events. Thus when the demand for an item of inventory arises, information is required as to the balance of the item on hand and its location; the level at which an item should be re-ordered and the effect of this new demand in relation to the re-order point; the quantity to be re-ordered should this new demand breach the re-order point; the source-cost-lead time for replenishment, and so on. This process goes on all the time throughout the business, and overall success depends on the quality of decision making, which is dependent on the quality of the information.

Now, if you were the boss over certain functions you would probably like to know how effective the operating systems are and how effective the operators are in directing them. So you would ask for reports to tell you what has happened and where matters stand. These reports would be your instruments for control.

But it is difficult to identify the need for action and to effect control without having some measure of what the situation ought to be. That is why companies seek to establish reference points for the year ahead by preparing a forecast of sales and production, a budget, and so on. When this is done in a so-
SO WHAT'S NEW?

The computer was not invented in the first place to respond to business needs but rather for use in more scientific fields. It was borrowed by business and adapted and modified to serve the business applications at hand. Essentially it has been applied to do what was already being done, but in greater volume and at faster speeds than before, and hopefully but only occasionally at lower cost.

Now, however, the "third generation" of computers has appeared and the first installations are being made. This equipment and related programming and operational techniques are designed especially to meet business information requirements.

Probably the most significant developments of the moment, and for some time to come, lie in the area of "communication networks" which permit the development of systems that link multiple locations where transactions occur and decisions are made into a central computer installation. Such networks may encompass all, or the more significant, plants, warehouses or sales offices of a company. Information received is sorted, calculated, summarized and recorded, and from it reports are prepared for management. Outlying locations may interrogate the central computer to obtain the information they need. Or the network may require that a remote location transmit data to the central unit where it will be processed immediately and the result read back to complete the transaction.

Present computer capacities permit large-scale data banks to be built wherein any given item of information is captured but once, is continually updated, is applied for all the purposes it may have, and is provided on-call whenever requested from outside the system.

So this—in part—is what's new. We have a tremendous capability in today's computers and in the communications linkages. This capability is being improved and refined each day. No fundamentally new computer and related capability is really required for the moment because our ability to design systems has not nearly reached a stage where present capability and capacity are fully utilized.

These technical developments lead to something else that is new. In the past the scope of management's view of its informational needs was limited by the data processing and communication techniques available. But today the level of technical capacity is such that these earlier limits have disappeared. This offers an incentive for innovation, as the opportunity is here for applying new approaches to information problems. We can take a more comprehensive and scientific approach in re-examining the whole matter.
HOW DO YOU GO ABOUT IT IN 1968?

The way to go about it is the way we have done it—withdraw a distance to take a new look at objectives. One key objective is to narrow the areas of uncertainty in decision making. To do so, we employ techniques that deal with information pertinent and relevant to management of an enterprise and then provide that information more completely, accurately, and currently. This raises two questions: What information for what purpose? and: What are the means for providing it?

Answers to these questions suggest that the computer and its associated technology be considered the means to an end and not the end itself. The goal is to achieve an information system, not to install a computer, and this change in perspective makes all the difference.

An approach focused on a careful definition of requirements leads eventually to examining the information requirements of the entire enterprise—for all operating systems and for planning and control purposes as well. For the computer technology now available permits us to build a data bank of all information, to update it continuously, to combine and process it, to recover it, and to read it out at will.

In any meaningful sense, information and systems of information do not really exist in isolation, for they relate to the underlying activities that are going on in performing the many functions of a business. Most of these activities are somehow interrelated. In fact, you might visualize an operating system as a closed loop—a cycle of actions taken in response to an event that generated a requirement that something be done and is then pursued until the requirement is satisfied. Likewise, company activity might be thought of as many such loops—a selling loop, a production control loop, a payroll loop, a costing loop, and so on. Many individual loops interact with other loops when any one of them depends on information from others and as activities overlap. Individual cycles can therefore be combined, and combined again, and again, until you eventually have only one loop—the company loop.

An analysis for company-wide planning and control involves an introspective look into all activities of the enterprise, not only to discover what is being done and how, but to re-determine what these activities should be. Under the H&S approach this analysis proceeds functionally and by cycles of activity, not department by department according to the organization chart, for that chart was designed to reflect yesterday's limited information technology.

Given overall information systems requirements reduced to specifications for computer, communications, and other types of data handling techniques, the total dimensions of the entire project can be described. Then the time, manpower, and costs for building the ultimate system can be estimated.

Once this type and scale of analysis is accomplished, the data bank underlying the whole system can be designed. Building a data bank is like building a mosaic. First the entire configuration is specified and then the system is built up piece by piece over a period of time until it is completed. All elements of information must be spelled out in the specification of requirements—the nature of each item of data, its numerical or alphabetical characteristics, its length, frequency of use, volume, and so on, as well as the appropriate mode of storage, such as core, tape, or disc.

Step by step the system design proceeds, computer programs are written, segments of the system are implemented and the ultimate system emerges. Sounds simple, does it?—Well, don't you believe it!
THE APPROACH ILLUSTRATED

Every industry has its special characteristics, every company is different even in the same industry, and every solution is different—if for no other reason than that you should be smarter this time than the last. However, fundamental approaches to matters with the same basic characteristics have general application, irrespective of the industry or the company. Fundamental approaches that prove sound do not change; rather, they mature as each experience produces a further degree of insight. The effective MAS man capitalizes on this fact.

As a result, the fundamental approach that we are applying to the "total system" type of problem has evolved over the years. It has proven successful in companies with widely differing characteristics, as for example, the Quaker Oats Company and the Pacific Gas and Electric Company. One is a major maker of foods; the other is the world's largest electric, gas and water utility company. But our fundamental approach and the principles applied in both situations are essentially the same, even though the subject matter of concern is vastly different.

The Quaker Oats QUICK System (Quaker Instant Centralized Knowledge) involves linking plants, warehouses, and sales offices via input/output devices and communication lines into a dual set of Honeywell 1250 computers located in the Chicago head-quarters. The span of this system is most broad, covering order entry and fulfillment, production scheduling, stock controls, procurement, freight-car control, personnel and stockholder data and many other activities, all built as a single, integrated company system.

The E.G. and E. system will have extensive communications network aspects too, for customer service, scheduling work, manpower and equipment, material control, and for other important aspects.

From the client's point of view, the name of this game might be "involvement"—and probably broader, deeper involvement than clients have experienced in any such program before. Client participation comes in from all levels, at all phases. It extends from a senior committee of top officials responsible for the subject matter of concern to the MAS project, on down through the many technical and operational levels of the company. Haskins & Sells participates by developing the objectives of the program, structuring the work, monitoring progress, providing technical guidance, and, most importantly, taking the lead in reporting progress, status and matters requiring decision by top management. This is a difficult task, given the manpower ratio of only one H&S man to some 15 or 20 client participants.

But we firmly believe this is the proper level of service for us to provide. We have built our MAS practice on the premise that we are in a proper consulting role, that we apply our knowledge to supplement that of the client while the essential manpower is deployed from his resources. This is truly a professional approach, one that produces the greatest client benefit and that brings considerable satisfaction to the MAS men concerned.