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Management Information Systems

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EDP systems, the "total" information concept — all these have become catchwords that often confuse rather than enlighten management. In this article the authors try to provide some perspective on —

MANAGEMENT INFORMATION SYSTEMS

By J. W. Konvalinka and H. G. Trentin

Arthur Andersen & Co.

IN A DAY when words are used with no real attempt to define them, it should be no surprise to find that some people are puzzled by the term "management information system." For one thing, people tend to confuse a management information system with an electronic data processing (or computer) system. Are they the same? If so, are all computers management information systems? If not, can you have a management information system without a computer?

Another series of questions surrounds the concept of the so-called "total" system. To what extent can all the managerial and decision making processes of a business be systematized? How necessary is it that all systems of the business be combined into one "total system?" In short, does a management information system (M.I.S.) have to be a total system? Finally, whether or not this is so, can an M.I.S. help you in planning and controlling your business?

All this confusion is blocking progress in the development and application of many of the newer management tools. This article is an attempt to put these questions into perspective and to suggest answers based on our experience in assisting clients to design and install management information systems. To do this we have divided the subject into four sections: (1) information and decisions, (2) development of M.I.S. concepts, (3) what an M.I.S. is, and (4) how you get an M.I.S. The emphasis is on the practical rather than the theoretical aspects of the question, and we have drawn examples from our experience to serve as illustrations wherever possible.

Information is vital to good decisions. The more pertinent and timely the information the better the decision – if the decision maker is equally capable in each case.

Military strategists will tell you that armies run as much on intelligence as they do on food. They will also tell you that no general ever has all the information he feels he needs before making a decision. An example: the decision General Eisenhower made to cross the English Channel in the face of an unexpected period of stormy weather and uncertainty about the disposition of the German forces in France. The winning general makes his decisions on a timely basis, using the best information available to him at the time and important intangible elements like experience, judgment, nerve, and an intuitive feel for people and situations.

Business managers operate in the

same way. They eventually make decisions regarding purchases, sales prices, products, people, acquisitions, and many other things which involve uncertainties of varying degrees about all of the pertinent facts and about all of the probable consequences of their decisions.

Let us not forget, though, that the amount and nature of the information desired by business managers vary with their personalities. Some are impatient with elaborate detail study and preparation and like to make quick decisions based on the information at hand as they begin their deliberations. These men get their best results when historical or environmental data are not the major influencing elements in the decision, for example, with a decision involving the introduction of a new product. Other managers delay decisions too long waiting for information that may be helpful but actually is not vital. Between the two extremes fall the vast majority of business managers, who generally achieve the right balance between waiting for more information and making quick decisions — but, like General Eisenhower, wish that more pertinent and timely information could somehow be made available on an economically feasible basis.

This important relationship between information and decisions has led to the great preoccupation with management information systems. The question has become an increasingly pertinent one in recent years. Tremendous information pressures have been exerted on every business by such external forces as rapid technological change, improved communications, and increased competition and by such internal stresses as interdepartmental rivalries, misdirected effort, and a general lack of control.

But if the pressures have grown, so have the means of coping with those pressures. The advent of high-speed data processing equipment and better communications (which also help to cause the pressure) offer an adequate solution to the problem. So do modern management techniques and scientific assistance such as operations research. The problem then becomes one of facing up to the information challenges and selecting the right combination of modern tools to respond effectively.

Development of M.I.S. concepts

Business literature in recent years has abounded with discussions of the need for and nature of management information systems.

The management scientists and operations researchers have made valuable contributions to better management decisions by the development of logical analytical approaches and specialized techniques. The operations researchers in particular have emphasized the importance of viewing the business as an integrated system and understanding the relationships among the various company functions. For instance, in tackling an inventory control problem, they have been more inclined than some of their predecessors to consider the impact on inventory decisions of forecasting methods, raw material purchasing strategies, production leveling requirements, and finished goods storage and distribution economics.

An example will illustrate. A highly fashion-oriented manufacturing company (whose M.I.S. will be described later), experienced heavy annual inventory losses because of markdowns of slow-moving styles at the end of the year. After various unsuccessful attempts to correct this condition, the problem was turned over to an operations researcher. The losses were traced to faulty forecasting based on salesmen's estimates, and a forecasting system was recommended which improved performance by a significant margin in its first full year of operation. Sales activity for several years was analyzed in complete detail to determine patterns of cumulative order build-up during the year. Based on the relation of early orders in the current year to the historical patterns, a system of projections of additional sales for the balance of the year was developed. A range of probabilities was determined at each reorder point which gave management an indication of its chances of selling various additional quantities of each style. This was expressed in dollars over the range of probabilities by applying unit profits anticipated if the additional goods were sold during the season and unit losses that would be realized if the additional styles had to be marked down at the end of the year.

After installation of this forecasting system, attention was turned to improving the system of buying raw material. Here the problem was one of reflecting the sensitivity in the demand for the finished product back into the purchasing commitments for material. This was done through an explosion of the material requirements for manufacturing and introduction into the final decision of such other factors as economic order quantity and the proper balance of inventory carrying costs.

With these two basic segments in place, the rest of the management planning and control structure was developed. Using similar approaches and enlisting the aid of specialists in data processing and production control where needed,

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the analysts made improvements in systems for deciding the desirable number of styles to be carried in the product line, scheduling and balancing operations, and developing data for short-range and long-range financial budgeting.

You can see from this example how logical it is to evolve an integrated information system to service all of the planning and control systems of a business. Sales and purchase figures, among others, are vital inputs to many of such systems and may readily be captured in suitable form in a well designed computer system and revised as required in the processing of data.

Management and research associations and electronic computer manufacturers have probably been more responsible for whetting the appetite of the businessman for an M.I.S. than any other source. We have all read the glowing promises in business literature and particularly in the ads announcing new equipment. These seem to imply that computer systems are synonymous with management information systems and that management decisions can be automated.

Take the following excerpt from a recent newspaper ad of a computer manufacturer:

"The (blank computer) is a total management information system. It can give you a sure grasp of your business. The control of it. The understanding of it. That's what we mean by the best management control for your computer dollar.

"It can be analyst, planner, forecaster, designer, scheduler, controller, order processor, even customers' man. It can keep you informed, on line and in real time. It can free you to plan and work creatively. To focus on key decisions."

"Computeritis"

Computers have made possible the collection and dissemination of more information more quickly and economically. If used to process properly designed information flows, they will help achieve better management information systems — but they are not the automatic answer to the business manager's need for decision information. As a matter of fact, the cause of the computer has been unjustly hurt because it has too often been contracted for prematurely.

We have come to recognize the early signs of this condition. They involve undue preoccupation with how data will be processed and the characteristics of the hardware. We usually suggest at this point that hardware should be the last matter considered when thinking about an M.I.S. We tell the businessman who appears to be afflicted with "electronic computeritis" that he should first decide what kind of information he needs — how soon and often — and that what kind of equipment will do this best is a secondary, although an important, consideration. It is surprising to hear of the many early wrong notions that are dispelled by concentrating on the information requirements, with a consequent shrinkage to realistic size of the computer and communications plans.

Furthermore, large centralized data processing centers connected with areas of operation by wire communications facilities, sometimes called management information centers, are not necessarily a prerequisite to or concomitant of an M.I.S. The desirability of such large "figure factories" depends more on the size and nature of the business operation than on the nature of the M.I.S. Many excellent management information systems are serviced by local data processing centers, and the most common arrangement involves a combination of local and centralized centers.

Before leaving the role of computers as processors of integrated data for management information, we should emphasize their ability to use such data in specialized operations research techniques. For example, consider the use of linear programing, which is an analytical or computational technique for solving a general class of optimization problems involving many variables related in a complex way. The solution of these problems involves the attainment of a measure of effectiveness such as profits, costs, or quantities produced for a given set of restraining conditions, including material availability, production capacity, and government regulations. In a specific case, the linear programing technique may systematically search through unit cost and quantity tables of hundreds of alternatives for making products at various plants of a national company, shipping to and storing at various warehouses, and ultimately shipping to customers in order to arrive at an overall minimum cost solution. These many trial computations can be made by hand, but standardized computer programs are now available that reduce the time and cost and thereby extend the area of applicability of linear programing.

What an M.I.S. is

In order to appreciate the significance of an M.I.S., we should explore the basic functions of management, namely, (1) planning, (2) execution, and (3) control.

The first function, which deals with company objectives and policies, covers the time period of, say, five or ten years forward. It is concerned with such things as total demand, share of market, new markets, new products, new plant sites, personnel sources and development, and capital requirements.

Execution, which involves carrying out the plans in the present, is what most of us in business do every day. We sell our products, manufacture more, build plants, hire people, pay our vendors and employees, and react to unplanned developments such as strikes and price cuts by competitors.

Control involves monitoring our execution by feedback techniques to determine that we are proceeding in accordance with plans and standards. The reports of our activities tell us how we are doing against sales quotas and expense

budgets, whether our capital appropriations expenditures, whether our manning tables conform to our standards, and so on through all phases of the business.

The management information system must provide the necessary intelligence on a timely basis to help management plan, execute, and control. Simply stated, an M.I.S. is a system of reports specially designed for this purpose, which means that they are position- or department-oriented to meet specific requirements. Incidentally, it was under the stress of this personal requirement that accounting and reporting of financial data were broadened over the years from a one-dimensional focus of "what did we spend our money for?" to a second dimension designed to show "who spent it and how does it correspond to budget?" —now referred to as "responsibility reporting."

Examples of some of the important elements which comprise an M.I.S. are the following:

1. Reports of historical company and environmental data for long- and short-range planning
2. Long- and short-range financial and operating budgets
3. Monthly financial and operating statements on a "responsibility" basis
4. Sales and order entry statistics, which provide input to many other systems such as sales quotas, salesmen's compensation, purchasing, manufacturing, shipping, and others
5. Reports to service the various control systems such as these:
   (a) Sales forecasting
   (b) Shipping and warehousing
   (c) Finished goods replenishment
   (d) Production control
   (e) Materials management
   (f) Manufacturing cost control
   (g) Personnel skills and manning control
   (h) Management incentives
6. Feedback which shows what should be done to the financial plan in view of actual results to date or what would happen to net income if hypothetical changes were made in the plan.

You cannot simply transplant a system from one company to another . . . the major portions of the system have to be especially designed to meet the needs of your business and its managers.

How do you get an M.I.S.?

How to get an M.I.S. is the question many managers are grappling with today. And the question is a perplexing one for a number of reasons. For one thing, even though the basic concept of a "total" system is not difficult to understand, as a practical matter it poses a number of problems. How far should a company go in striving for a total system? Should it attempt to systematize and automate every possible function, stopping only at the highest policy and decision level? Or should it settle for something less, which might bring only an organized network of different systems sharing certain inputs and certain outputs? Then again, what effort is required to achieve a total system, and should the project be tackled in one phase or in several intermediate phases with the ultimate goal removed several years?

We are convinced that there is no easy answer to these questions. There is a finite limit to which systems development can be carried, and every company must decide for itself at what point that limit will be reached. You cannot simply transplant a system from one company to another. Not only are the systems requirements different from company to company but also the ability to perfect all management skills, including systematization, will not be the same in any two companies. Models from other companies, books, or computer manufacturer manuals may be helpful as checklists or guides, but the major portions of the system have to be especially designed to meet the needs of your business and its managers.

To provide an illustration of how a particular company might approach the M.I.S. problem, we have developed a hypothetical example that represents a synthesis of several of our assignments. The objective here is to portray graphi-

cally what types of systems can be combined to provide a "total" system and what the output of the system should be in terms of management control and information reports. In addition, we want to demonstrate how the M.I.S. project was organized. Our experience has led us to the conclusion that anything short of the approach outlined below will give inadequate results.

Able Manufacturing is a highly fashion-oriented company with manufacturing plants in various parts of the United States and nationwide sales and distribution facilities. A change in management prompted a critical new look at how the company had been faring.

Although the company was one of the leaders in its field, this position was the result of its pioneering effort. Competition from more vigorous young companies had leveled Able's rate of growth and reduced its rate of return to only tolerable percentages.

Typically, Able's new management embarked upon a profit improvement program which involved the introduction of many modern management techniques, including a management information system. After careful consideration of the alternative ways in which the project might be carried forward, Able's president accepted the recommendation that well organized interdepartmental teams be commissioned and given responsibility for the project, which was titled "Management Information System Development" (M.I.S.D.). This approach had the advantage of keeping the M.I.S. an entire company project, not just one organized by finance or administration. It also brought the right mixture of talents to bear on the problem, since Able felt that the basic information requirements should be set by the user of the information. Representation on the team from sales and production as well as the service departments helped assure that all information users would have a voice.

Organization of the effort was accomplished in the following way. A policy committee was appointed to plan and review M.I.S.D. activities on a broad basis. This committee met about once a month to authorize projects, hear progress reports, and make decisions. It consisted of the president, the executive vice president, the vice president of manufacturing, and the vice president of industrial relations and personnel. The selection of these men was made primarily on the basis of personal qualifications and characteristics rather than their functional responsibilities.

The policy committee selected an M.I.S.D. steering committee and approved its charter. This committee met as often as required, usually not less than once a week. The vice president of finance was appointed chairman, and with his participation a representative group of top and middle managers was selected from the various functional areas of the business, including the vice president of marketing, the comptroller, the newly appointed director of Management Information Systems, and others.

The charter of the steering committee (1) set forth the objectives in broad terms; (2) identified areas of special concern in developing an M.I.S. such as organization structure, management policies, and profit and cost center concepts; and (3) provided for the organization of task forces to conduct the required studies and make recommendations.

Task forces

Personnel of the task forces were assigned, for the most part, on a full-time basis from the particular areas under study. Although the task force leader was usually a representative of middle or top management, most of the task force personnel were selected for their technical skills. To ensure that the data processing requirements of the M.I.S. would receive proper emphasis, members of the data processing staff were assigned to each task force. Technical representatives of our firm were attached to some of these task forces and were the means by which our consultants at the steering and policy committee levels helped plan and execute the M.I.S.D. effort. Each task force was charged with a specific task and timetable for reporting to the steering committee.

As the M.I.S.D. project developed it necessarily covered all areas of the business. It required approximately three years to complete. Its scope can be visualized from the following M.I.S.D. organization structure:

Policy Committee —
Steering Committee —
Task Forces
- Company organization
- Management and operating policies
- Budgets
- Monthly reporting
- Expense management
- Standard cost accounting
- Data processing
- Customer accounting and statistics
- Long-range planning
- Inventory management

As one of its early actions under this program the company placed orders for computing equipment of an advanced line announced by a manufacturer that had serviced the company's data processing needs in the past. This was done on a generalized basis before the full requirements were known in order to reserve favorable delivery time, and the orders were particularized as the various task forces completed work in the assigned areas of the business.

In the exhibits you will see, in broad terms, the end product of the M.I.S.D. effort. Our objective is to show how the teams were able to organize virtually all of the company's procedural and information systems into one integrated M.I.S. utilizing common files or a "data bank." We also want to show how the reports generated by the new system brought many of the key variables in the business into a new focus to aid in prompt and

EXHIBIT I

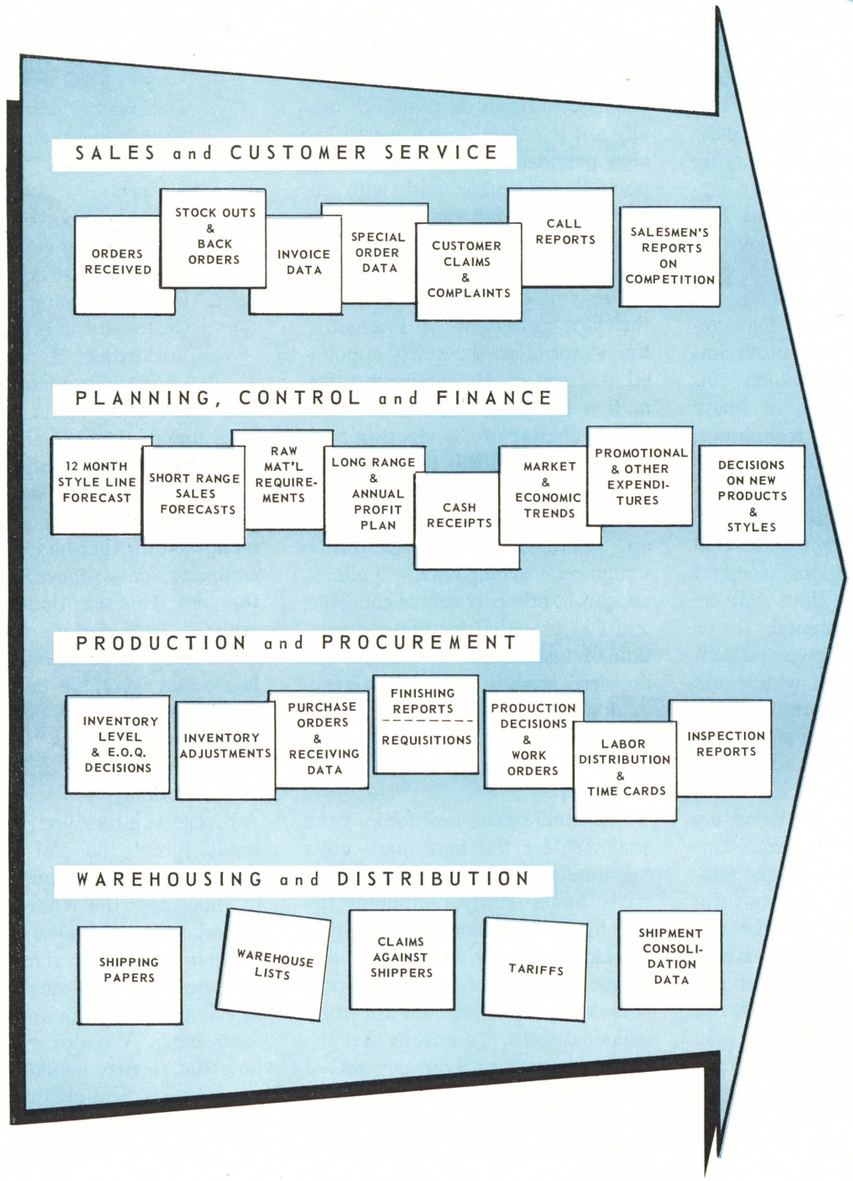
Overview of
ABLE MANUFACTURING COMPANY'S
INTEGRATED MANAGEMENT INFORMATION SYSTEM

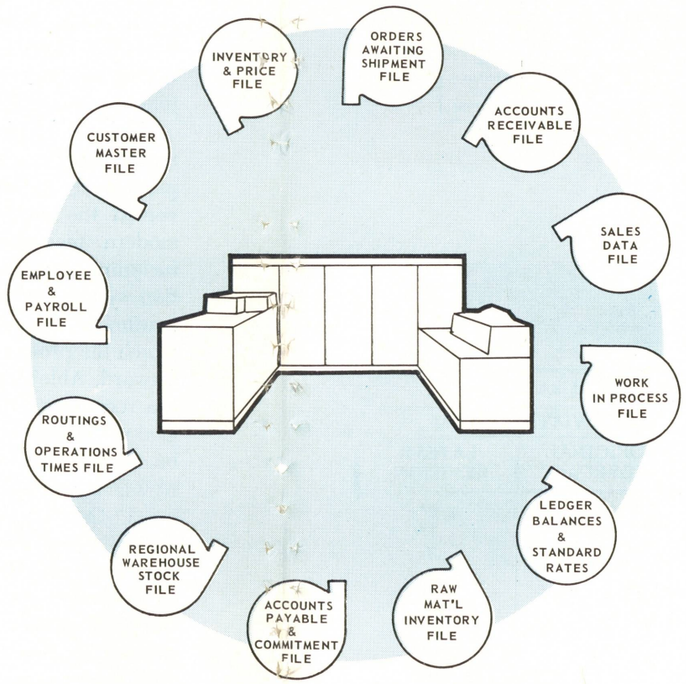
INPUTS from major business functions . . .

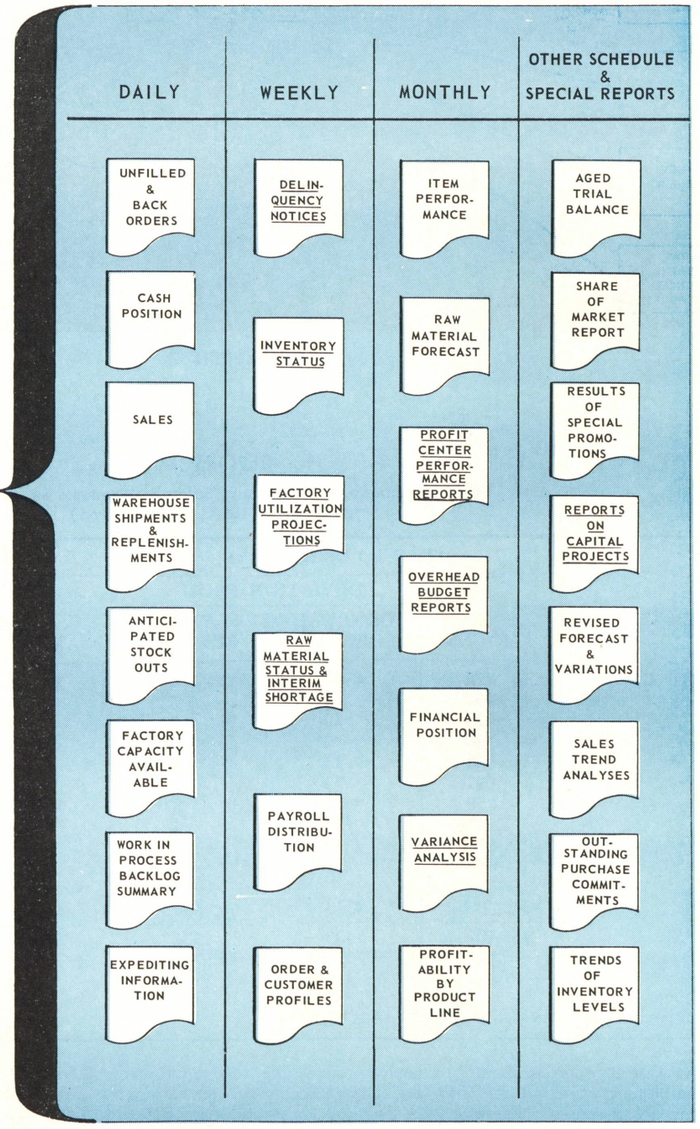
to a

CENTRAL INFORMATION PROCESSING UNIT

. . . Result in OUTPUTS which include key reports to management







KEY TO REPORTS

CONTROL REPORTS

INFORMA-TION REPORTS

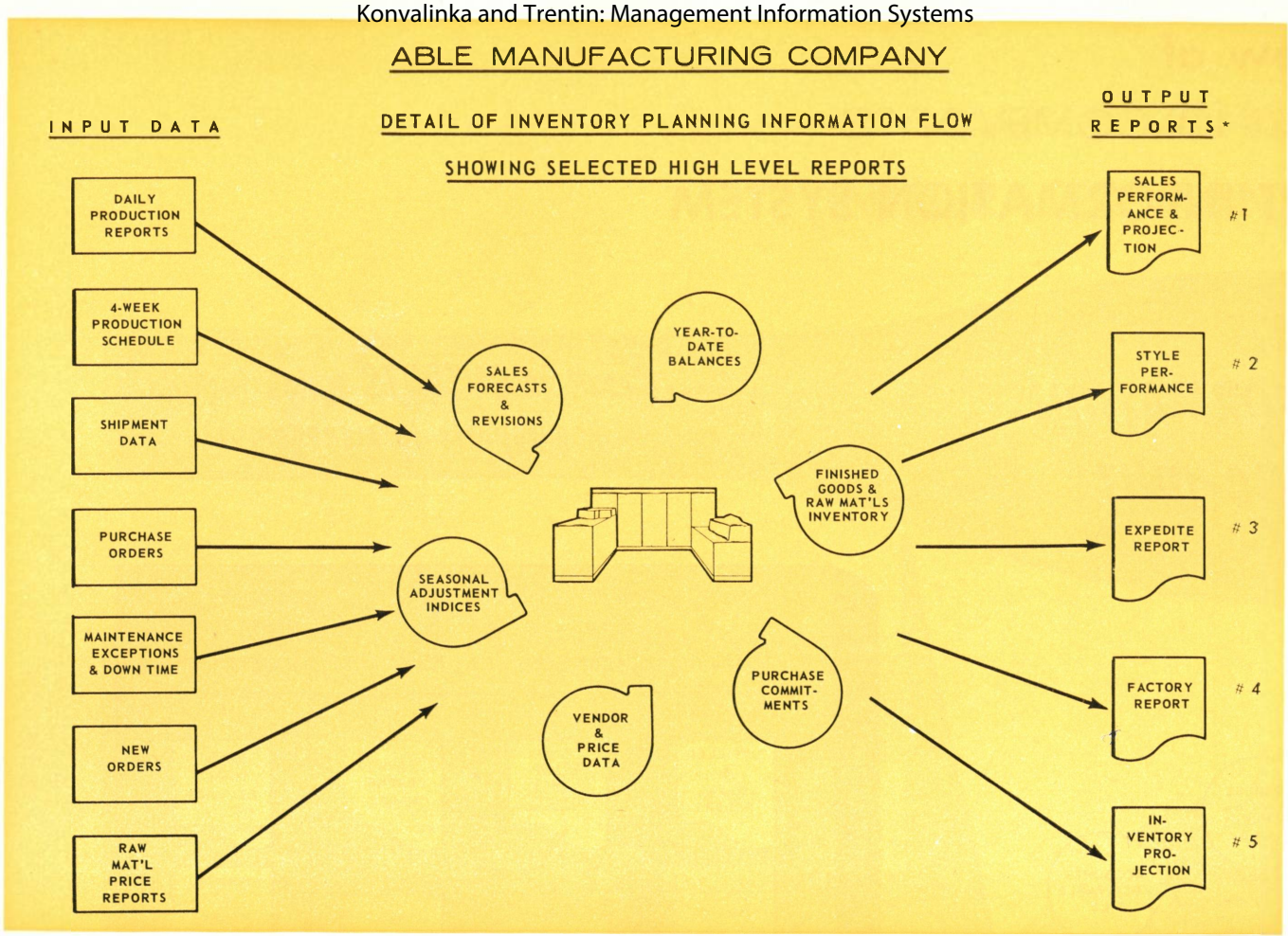


EXHIBIT 2

REPORT 1

Able Manufacturing Company, Sales Performance vs. Plan
September 30, 196X, (000 omitted)

	YEAR TO DATE SALES			THIS MONTH SALES		
		DEVIATION FROM			DEVIATION FROM	
	AMOUNT	ORIGINAL FORECAST	LATEST REVISION	AMOUNT	ORIGINAL FORECAST	LATEST REVISION
PRODUCT LINE A	$ 778	$ 58	$ 4*	$ 86	$ 7*	$ 2*
B	907	21	5	98	6	1*
C	829	19	2	90	3	3
D	786	9*	2*	85	4*	2
E	800	15	6	86	6*	3*
F	691	11	1	75	9	6
G	850	12*	3*	92	3	1
H	1,123	17	4	122	11	4
I	878	9	1	95	2	6*
J	987	25*	7	107	5	4
OTHERS	$43,868	$329	$54	$4,899	$178	$ 8
TOTAL	$52,497	$433	$71	$5,835	$200	$16

*Below plan
†Based on year to date sales after seasonal adjustment

Note: As well as reporting monthly sales by product line, this report shows the expected and actual results against the original forecast and all revisions. By the application of standard gross profit rates, the profit effect of all deviations can be measured, and revisions in the profit and production plans can be recognized and made on a timely basis.

decisive management action. Please bear in mind that not all of the subsystems were integrated at one time and that the ultimate usefulness of the reports was attributable to a strong management planning function as well as to a well organized information flow.

Exhibit 1 on pages 32 and 33 shows how the major business activities create data input to a central processing unit on a daily, weekly, and monthly basis. Such inputs of data in previous periods have resulted in master files of data relating to customers, employees, inventories, and all other phases of the business, accumulated from previous processing cycles. As current information is processed, the applicable master files are updated, and the prescribed control and information reports and documents are prepared automatically. The types and volumes of planning and control reports generated from the basic data are limited only by the needs of management and the creativity of the systems analysts assisting management in the definition of requirements.

In Exhibit 2 on page 34 we have taken one segment — inventory planning — and illustrated in more detail how this process works. Exhibit 2 is followed by five typical reports that would be produced by the processing cycle in this area.

Conclusions

In this hypothetical example we have digested the results of our experience in many management information systems consulting assignments. Some of you may be questioning the suggested scope of such an undertaking. You may have had the impression that such projects involved largely the installation of a computer with some peripheral activity concerned with determining needed statistical data and reports. It may be that some management information systems assignments stay confined to this relatively simple pattern, but the inevitable tendency to expand is easily explained.

The first expanding influence is the computer itself, which is identified with so many of these M.I.S. projects. Most observers dealing with the computer field have come to recognize that its scope and potential is such that the old compartmentalized notions of decision responsibilities and data processing interfere with efficient utilization of the new equipment and related techniques.

Secondly, the nature of a management information system leads naturally to a re-examination of many basic management approaches. The starting question "What information do the various managers need to accomplish their missions?" evokes "What is their mission?" In most cases the answer to the second question is not readily forthcoming, for on probing you do not get articulate or unanimous answers

REPORT I (cont.)

Able Manufacturing Company, Sales Performance vs. Plan
September 30, 196X, (000 omitted)

PROJECTED DEVIATION OF FUTURE SALES†						EXPECTED AT YEAR END		
OCTOBER		NOVEMBER		DECEMBER			DEVIATION FROM	
ORIGINAL FORECAST	LATEST REVISION	ORIGINAL FORECAST	LATEST REVISION	ORIGINAL FORECAST	LATEST REVISION	TOTAL SALES	ORIGINAL FORECAST	LATEST REVISION
$ 8*	$ 3	$ 5*	$ 2*	$ 15*	$ 2	$ 1,011	$ 30	$ 1*
3	1	7	2	10	6	1,180	41	14
5	2*	3*	1	12	4	1,078	33	5
9	3	15	3	8	4	1,022	23	8
7	4	6	1*	11	5	1,040	39	14
6	3	9	4	2*	3	898	24	11
2*	2	7	2	4	2*	1,105	3*	1*
5	4	12	2	9	5	1,460	43	15
1*	1	2*	2*	12	4	1,141	18	4
2	2	4	1	3	2*	1,283	16*	8
$115	$10	$230	$30	$247	$21	$58,782	$ 921	$115
$141	$31	$280	$40	$299	$50	$70,000	$1,153	$192

An M.I.S. project may often cause a change in the assignment of responsibilities....

Able Manufacturing Company
Style Performance Report
September 30, 196X (week 39)

PRODUCT LINE B

STYLE	YEAR TO DATE DEVIATIONS FROM PLAN[1]			THIS MONTH DEVIATIONS FROM PLAN[1]		
	SALES	PRODUCTION	ENDING INVENTORY	SALES	PRODUCTION	ENDING INVENTORY
XAGO	$ 300*	$ 3,600	$ 3,900	$ 200*	$ 500	$700
XDZG	600	—	600*	350	—	350*
YHQN	2,200	1,600	600*	400	200	200*
ZMVO	400	1,200	800	450	800	350
APET	1,900	4,000	2,100	200	400	200
DUFH	800*	3,000	3,800	175*	200	375
GBEN	1,100	—	1,100*	250	—	250*
JLMD	900	—	900*	325	—	325*
WBPN	100	2,400	2,300	190	680	490
PTSY	500*	1,400	1,900	300*	290	590
RVWB	1,000	2,700	1,700	510	470	40*
OTHER STYLES	14,400	18,500	4,100	4,000	3,350	650*
TOTAL	$21,000	$38,400	$17,400	$6,000	$6,890	$890

*Below plan
[1] Based on year to date sales after seasonal adjustments
[2] And existing production plan

Note: This report expands on Report 1. It relates sales performance of a style to its production and inventory levels, to maintain maximum flexibility in production scheduling. Where a style is falling below its sales forecast, the basis is provided for curtailing production on that item and shifting the resulting available capacity to where it may be needed. (Total sales for the entire product line, Product Line B, are shown on Report 1.)

REPORT 2

to questions such as the following:

- Who has profit responsibility? Top management, marketing management, or manufacturing management?
- Who has responsibility for the size of inventories and obsolescence losses thereon?
- Should marketing management or manufacturing management make the final decision on special product runs or unusual size of orders?
- Are the functions of staff and line management defined so that the responsibility for operating decisions is clear?
- Are the bases for measuring the performance of the various people in management specified?

Even in those cases where organizational responsibilities are clearly defined, the intense reappraisal of all activities occasioned by an M.I.S. project may result in changes in approach. For example, top management may well decide to change its approach on the assignment of responsibilities. Thus, we have heard it said that a company has been too manufacturing-oriented or too marketing-oriented or too research-oriented in the past and that the emphasis should be changed by giving more responsibility and authority to another functional group. You can appreciate how the nature and flow of information required would change if more emphasis were placed on marketing control of decisions regarding product lines, for instance, or on size of inventory, location of warehouses and plants, or order sizes.

Manuals

Decisions relating to these matters should be reflected in organization and management policy manuals, and if these do not exist it is generally deemed desirable to prepare them as a prerequisite to, or concomitant of, the M.I.S. development.

Questioning of organizational re-

Able Manufacturing Company
Style Performance Report
September 30, 196X (week 39)

PRODUCT LINE B

PROJECTED INVENTORY LEVEL USING LATEST FORECAST[1,2]							
END OF WEEK 40		41		42		43	
UNITS	DAYS' SALES	UNITS	DAYS' SALES	UNITS	DAYS' SALES	UNITS	DAYS' SALES
38	8	43	10	50	12	56	13
17	4	(6)	(1)	(2)	(1)	(6)	(2)
19	4	16	4	(20)	(4)	(24)	(5)
20	4	20	4	26	5	30	7
21	5	25	5	27	5	32	7
39	8	65	16	74	18	78	19
61	15	46	11	(53)	(13)	(60)	(15)
31	7	(8)	(1)	(2)	(1)	(5)	(1)
12	3	20	4	21	4	28	5
25	5	4	1	20	4	23	5
45	10	18	4	9	2	3	1
320	80	270	68	250	63	298	75
648	153	513	125	400	94	453	109

REPORT 2 (cont.)

REPORT 3

Able Manufacturing Company
Weekly Expedite Report
September 30, 196X (week 39)

STYLE	SAFETY STOCK (units)	PROJECTED STOCK-OUT NEXT SIX WEEKS[1]		ITEM NOW RUNNING AT PLANTS NO.	CAPACITY TO COVER STOCK-OUT AVAILABLE AT		HOURS NEEDED TO RESTORE TO SAFETY
		WEEK	QUANTITY SHORT		PLANT NO:[2]	LINE	
XDZG	25	41	31	1-6-3	4-6	1,7,15	192
YHQN	40	42	60	1-6-3	4-6	2,3,5	568
GBEN	100	42	153	2-7	—	—	791
JLMD	60	41	68	4-7	—	—	213

[1] Based on year to date sales (after seasonal adjustment) and existing production plan

[2] Based on existing production plan, subject to any prior special orders

Note: This report expands on expected stock-outs disclosed in Report 2, showing available plant capacity and amount of inventory and production hours needed to restore safety stock and cover planned requirements.

Able Manufacturing Company
Factory Report — September 30, 196X
(000 omitted)

	YEAR TO DATE				THIS MONTH	
	EARNED HOURS		PLANT UTILIZATION		EARNED HOURS	
	NUMBER	DEVIATION FROM PLAN	%	DEVIATION FROM PLAN	NUMBER	DEVIATION FROM PLAN
PLANT 1	98	3*	78	2*	11	.4*
PLANT 2	139	6*	84	1*	15	.7*
PLANT 3	117	5	86	6	13	.5
PLANT 4	81	2	61	14*	9	.2*
PLANT 5	108	9*	84	3*	12	1.1*
PLANT 6	144	4	82	2	16	.5
PLANT 7	126	1	90	1*	14	.2

*Below plan

Note: This report focuses on plant utilization and pinpoints variations from plan as well as the major reasons for those variations. The information here comes from the same source as the information on Report 3 relative to plant capacity for certain lines.

REPORT 4

Able Manufacturing Company
Weekly Raw Material Inventory Projection
September 30, 196X (week 39)

RAW MATERIAL CODE	END OF WEEK		LEAD TIME	SAFETY STOCK	ON ORDER DUE IN WEEK						
	MATERIAL ON HAND	DEVIATION FROM PLAN			40	41	42	43	44	45	46
281	2,758	204	2	1		600		450			
282	204	816*	3	2			1,400		1,400		1,800
284	421	286*	2	1		100		400		400	
290	575	55	1	1	75		75		75		75
301	1,008	122*	2	1		350		450		550	
350	900	500*	3	2			1,500		1,500		1,500
423	847	47	2	1		500		400		300	
424	3,100	100	2	1							1,500
500	290	90	1	1	40	40	40	40	40	40	40
501	1,949	49	1	1	900			600		600	

*Below plan
[1] Based on existing production plan
[2] For quantity sufficient to restore safety stock

Note: This report helps ensure that the production plan and finished goods inventory levels can be met. Changes in either of these plans are reflected in this report, and attention is drawn to any exceptions in the planned level of raw materials inventory.

REPORT 5

sponsibilities and management policies often stimulates a re-examination or revamping of control systems such as cost accounting and production and inventory management. For example, if manufacturing management were to be judged solely on cost performance and if this were carried to the point of introducing an incentive system based on actual performance against standard, the company would require a rather sophisticated standard cost accounting system and a set of performance reports to reflect results of operations. In a manufacturing company the cost consequences of manufacturing operations constitute a major segment of any M.I.S., which explains why cost accounting systems installa-

Able Manufacturing Company
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(000 omitted)

THIS MONTH		LOST HOURS DUE TO			AVAILABLE HOURS NEXT MONTH
PLANT UTILIZATION					
%	DEVIATION FROM PLAN	UNPLANNED DOWN TIME	SCHEDULE GAPS	PRODUCTION BALANCE	
78	2*	.4	—	—	11.9
82	3*	.2	.4	.1	16.4
82	2	—	—	—	14.2
65	10*	.1	.1	—	9.6
88	1	.5	.6	—	13.7
87	2*	—	—	—	17.3
90	5*	—	—	—	14.3

REPORT 4 (cont.)

Able Manufacturing Company
Weekly Raw Material Inventory Projection
September 30, 196X (week 39)

PROJECTED USAGE IN WEEK[1]							PROJECTED STOCK-OUT[1]		INDICATED PURCHASE PRICE[2] VARIANCE
40	41	42	43	44	45	46	WEEK	QUANTITY	
45	45	40	42	46			—	—	—
400	400	400	400	400	400	400	40	996	5.5¢
150	150	150	150	150	150	150	43	79	14.7¢
80		80		80		80	—	—	—
	600		600		600		—	—	—
500	500	500	500	500	500	500	41	600	11.2¢
	90		210		660		—	—	—
375	375		375	375		375	—	—	—
90		90		90		90	—	—	—
300	300	300	300	300	300	300	—	—	—

REPORT 5 (cont.)

tions so often accompany M.I.S. development. In the same way, questions about inventory policy and responsibilities very often lead to much needed improvements in the production and inventory control systems.

In summary, the great current popularity being enjoyed by management information systems development is responsible for improvements in management skills and techniques in many companies which would not have accomplished them so soon otherwise. If your company has not had this experience yet, you should ask the door-opening question at your next staff or management meeting: "Do we have the information we need to run our business?"