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What People Are Writing About

Authors

Edward L. Summers, Philip Tibbs, G. F. Dominiack, Shirley M. Arbesfeld, Peter H. Durkee, and Arthur V. Corr

what people are writing about

BOOKS

The Rational Manager: A Systematic Approach to Problem Solving and Decision Making by CHARLES H. KEPNER and BENJAMIN B. TREGOE, McGraw-Hill Book Company, 1965, 275 pages, \$5.95.

This is a self-help book, but it is more concrete and less inspirational than most of that class. The authors have done some serious thinking about their subject, and while they have not made any major breakthroughs, businessmen should find their conclusions useful.

Information is the raw material with which managers work, Mr. Kepner and Mr. Tregoe argue, and therefore the best way to improve managerial performance is to improve managers' use of information. Ignoring the brainstormers and human relations theorists on the one hand and the computer decision making specialists on the other, they present a series of logical procedures for analyzing and solving problems.

The authors define a problem as a deviation from some standard or norm of desired performance and a decision as a choice among various ways of getting a particular thing or end accomplished. They outline

separate analytical procedures for analyzing problems, for making decisions, and for preventing potential problems, each illustrated with diagrams and lively industrial case studies.

Their approach is logical rather than psychological. Perhaps for this reason, their discussion of problem solving—an inherently more logical process than decision making or problem prevention—is more convincing than their discussion of the other processes.

All the precepts offered are basically common sense, but they are less common and more sensible than those found in most treatises on these subjects. The popularity

REVIEW EDITORS

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of the authors' problem-solving training courses suggests that many executives have found their methods helpful.

Analysis for Military Decisions, edited by E. S. QUADE, Rand McNally & Company, Chicago, 1964, 382 pages, \$10.

Based on lectures in a course given by the Rand Corporation, this book discusses the strong and weak points of an analytic approach to long-range planning. Many of the points made should be of interest to civilian as well as to military systems men.

Although it is aimed at a military readership, this volume contains a good deal of material that is equally applicable in business. The military approach to model building for decision making is described in detail. The basic concepts are illustrated by military and engineering examples, but the concepts themselves—including selection of criteria for judging solutions and systems involving conflict—are highly relevant to business systems design. So are some of the topics discussed in the section on systems applications, among them the use of computers, costing methods, and pitfalls in systems analysis.

The book concludes with what might be called a "proposed systems audit," questions for use in evaluating the soundness of a proposed system. With modifications, these questions could be used to test the soundness of a business system as well. Appendices apply the systems approach to a lunar base problem and to a comparison of missiles.

The style of the book is straightforward, spare, and understandable. There is little mathematics. On the other hand, no one's intelligence is insulted by oversimplification.

Experienced systems analysts will probably find no new information in this book. Along with others less well informed, however, they should benefit from seeing accepted systems principles usefully applied

in an area with which they may not be familiar.

EDWARD L. SUMMERS
Rice University

MAGAZINES

Transformation of New Knowledge for Economic Growth by WERMER Z. HIRSCH, *California Management Review*, Spring, 1965.

Organized knowledge transformation is becoming a major combined effort of government, universities, and private industry. This article raises and attempts to answer the question: Will enough economic growth result to justify the necessary expense?

Some technological advances increase the quantity of existing goods and services, while others produce new goods and services which were not available before. Much of the new knowledge will ultimately be put to use. However, the transfer of new knowledge often lags far behind its discovery. This time lag should be eliminated, Mr. Hirsch urges.

Knowledge should be viewed as a capital resource. It is subject to obsolescence; it can be marketed, processed, stored, distributed, and used in production of goods and services. New knowledge can be channeled into uses for which it was originally intended, or it can be channeled into unexpected additional uses. The former is the "application" of knowledge; the latter is the "transformation" of knowledge. The creation of new knowledge is very expensive, but the transformation of new knowledge into new uses costs little.

New knowledge spills over from one person to the next. This "spill-over" has two weaknesses. The fear that new knowledge will not remain restricted in ownership discourages investment by private industry. Spontaneous "spill-over" appears too limited and too slow a process. Thus, there is a need to manage the "spill-over."

Efforts can be concentrated to

try to improve the "spill-out" or the "spill-in" of new knowledge. It is more difficult to manage the "spill-out" than the "spill-in." There are many contributions to knowledge, and each may have a large number of potential uses and users. The problem of matching new knowledge with end uses is large. The manager of a particular company, on the other hand, has a limited number of projects that can be solved with the aid of new knowledge. Therefore the matching process is easier. For this reason the author believes that "spill-in" management should predominate.

A unified government-industry-university approach to the problem is suggested. Financial support should be given to research institutes. A few companies that produce both space and consumer goods might be selected to demonstrate how new knowledge can be adapted for commercial use. Some Federal assistance should be given these companies. Mr. Hirsch also suggests a more liberal patent policy and incentive-creating tax provisions. More readily available risk capital should be provided for those willing to apply new knowledge to product development and improvement. Firms in the aerospace industry should be encouraged to do research that leads to commercial uses. The Government should sponsor an effort designed to store new knowledge. Companies must be able to retrieve such information easily and on short notice. Private industry must learn how to retrieve the stored information and how to apply it. Companies with sophisticated research and development capability will automatically have effective management for the "spill-in" of knowledge.

The question remains whether the payoff from knowledge will be great enough to offset the cost. Mr. Hirsch feels that while it is impossible to be sure, the prospects are good and the goal of economic growth is important enough to justify taking the chance.

PHILIP TIBBS
The Ohio State University

Partners in Profit: The Data Processing Service Center, the CPA and the Small Business by CONSTANTINE KONSTANS, *The Michigan CPA*, March-April, 1965.

The popular notion that small businesses cannot afford the expense of a computer is erroneous, Mr. Konstans points out, for "the small business can enter into an informal partnership with the CPA firm and the data processing center" that will make available to it the finest equipment and the services of a staff of full-time trained specialists.

A cooperative relationship linking the small businessman, the CPA, and a data processing center can be beneficial to both the client and the CPA. As Mr. Konstans points out, write-up work for the client is "disproportionately time-consuming in relation to its productivity in terms of useful information." Hence, "an interesting development among the smaller CPA firms who predominantly service small businesses is the working arrangement with data processing service centers." Utilization of the services of these centers allows more time for other services that the CPA is capable of performing, such as tax planning and budgetary control systems design. Perhaps most important to the small businessman is the fact "that he pays for these only as he needs them," saving the cost of obtaining and maintaining a staff. The author stresses "that the implicit savings are directly correlated to the abilities and imagination of the CPA" in using the center.

Mr. Konstans notes that there are three broad classes of service centers, computer manufacturers' service centers, independently owned and operated centers, and company-operated centers leasing excess time on a "do-it-yourself" basis. The first two types are most helpful to the small businessman since they sell service, not machine time.

Service centers offer both standardized and specialized record-

keeping programs and, in most cases, the capacity for more sophisticated commercial applications relating to capital investment analysis, portfolio selection, inventory control, and critical path scheduling. "Because 'package' programs use a common program for many different clients, costs such as those related to job setup are minimized." The author notes that these programs are constantly under study by the specialists at the center for possible improvement and expansion. Moreover, "as the small firm grows and needs additional and more specialized information, the services of the service center can be expanded," still without a substantial capital investment by the small businessman. It is possible to include "on-premise" basic recordkeeping in the system. Management analysis and prediction problems, including branch plant location decisions, component make or buy decisions, bid evaluations, and sales and demand forecasting, are perhaps especially good candidates for the outside service center since they "involve little reference to files" and are "carried out in high-speed memory and arithmetic units with little requirement for input-output machine capabilities."

Among the areas of service center potential of greatest immediate advantage to small business are the following:

1. Generally faster and more reliable reports
2. Elimination of turnover and absentee problems, along with the elimination of supervision, training, and overtime costs
3. Assumption by the service center of peak workloads during report-preparing time
4. Use of the service center as a training ground by firms considering a computer installation
5. Closer control over processing costs because the service center charges vary directly with usage
6. Transfer of the risks of equipment obsolescence
7. Availability of the service center as a stand-by for the firm's own computer installation.

But "the biggest advantage . . . is the availability of trained specialists."

Mr. Konstans also gives some examples of unfavorable experiences with service centers. "The major criticism" of one CPA firm "centered around the general lack of accounting orientation of service centers." Others blamed the proliferation of service centers for the biggest problem service centers have to face, the attraction and retention of capable personnel. But the blame for many of the problems "does not completely lie" with the center. "The business community and many accountants have not made a concerted effort to educate themselves to computer capabilities and limitations. . . . The problem is especially great where the small business does not employ a CPA or employs a CPA who does not understand machine problems well enough to 'supervise' and review the quality of the records."

The author conducted a study on the effectiveness of operations in which the service centers and CPA firms can combine with the small business for the production of better information. His findings were, briefly, as follows:

1. "The small business's accounting system is strengthened by going to a service center application because the existing system is usually formalized and refined. . . . Frequently a 'cleaning-up' of office procedures and daily office routines emerges." For the CPA, "methods of information selection, collection, and use may be overhauled" and "workloads may be rescheduled. . . . The learning-value implications to the CPA of each new service center application cannot be overlooked." The author reports that one service center "requires the attendance, at a four-day training program, of a staff member of any CPA firm dealing with it."

2. "The small business must rely on its CPA for imaginative and effective service center applications." Mr. Konstans presents examples of how package programs have been utilized, at the CPA's suggestion,

to produce entirely different but substantially more useful information than that for which they were originally intended.

3. "The CPA must recognize the time when his client's existing system is ready for change." With his help, the client must make a thorough analysis of information needs "not only because the client will be paying the higher service center 'custom' program rates, but also because a capital investment decision may be faced in respect to acquiring a basic data recording machine."

4. "The CPA must be alert to computer applications that may benefit his client in areas aside from recordkeeping and reporting." An example cited here is the use of a computer to engineer the product.

5. "A small businessman can eliminate a great many of the personnel problems associated with clerical help."

G. F. DOMINIACK, CPA
Michigan State University

Phasing Out Weak Products by PHILIP KOTLER, *Harvard Business Review*, March-April, 1965.

This article describes a new control technique, still in the process of development, for keeping the product line relatively free of unprofitable items.

Management's attention to the problem of achieving the optimal product mix is usually focused on product improvement and new product development, with little provision for systematic assessment of yesterday's products. Uniform procedures have been developed for the evaluation of new products, but in the case of old products sentiment, organization morale, irresolution, and confusion over the application of the proper standards prevail. As a result, many businesses are plagued with a product mix that includes many unprofitable items.

The author proposes the appointment of a high-level and broadly representative management team

guided by explicit standards and information, to evaluate the existing product line. The controller would prepare a data sheet for each of the company's products covering a period of three or four years. It would list such information as industry and company sales, physical volume, unit cost, etc. Review of the data sheet would separate products that are satisfactory from those that require further study. A product would be selected for additional analysis if it provoked yes answers to all of the following questions: Has the product's share of total company sales declined for n years? Has its market share declined for n years? Has its gross margin slipped for n periods? These questions are merely illustrative; others considered important to management may be included.

At this point the management team would convene for formal product rating. Those products selected as dubious would be rated against seven different scales. Each scale would range from zero (representing elimination of the item) to one (representing retention). The scales proposed by Mr. Kotler would rate a product for future market potential, gains from product modification, change in market strategy, release of executive time, alternative opportunities, contribution margin, and the product's contribution to the sale of other products. If management considered these scales of unequal importance, each scale could be assigned a weight value. The rating for each scale would be multiplied by its assigned weight. All of the weighted ratings would be summed to give the Product Retention Index. The higher the index the stronger the arguments for retention of the product.

The indexes are designed to enhance rather than supplement management's judgment. A very low index should not result in an automatic decision to drop the product. Management must consider the total effect on its business operations. The net result may be different from the sum of the individual effects because of product

interactions. The effect on profits, sales stability, and growth of a change in product mix is crucial information. Computer simulation may be the answer. This approach would require assumptions regarding the future behavior of sales, costs, and profits for proposed product deletions and additions.

Once the decision has been made to eliminate a product, a phasing-out plan must be custom-tailored to the individual product's circumstances. Some factors to be considered are present inventory level, shifting of employees, salvage value of machinery and inventory, and the possibility of selling the dropped product to another manufacturer. Could the company gain by waiting? If the product has had major distribution, the use of PERT may increase efficiency in its phasing out.

Although this system appears expensive in terms of executive time, it will result in a badly needed definition of standards, accumulation of pertinent data, and emphasis on the necessity for making decisions. It should ultimately provide the answer to achieving an optimal product mix.

SHIRLEY M. ARBESFELD, CPA
New York University

Forecasting Considerations in Design of Management Information Systems by PAUL A. STRASSMAN, *NAA Bulletin*, February, 1965.

The author explores the cost-saving possibilities of speeding information flow by the use of industrial dynamics forecasting techniques within the decision making units of the company.

It is axiomatic that there are true costs of information. These costs include direct money expenditures, costs in terms of time, and costs of opportunities lost because of slow or faulty information. Mr. Strassman examines how these costs may be reduced in spite of the uncertain and changing environment of all competitive businesses. The author argues that the typical corporate information system is

characterized by "excessive segmentation" and reliance on "historical" reporting. Excessive segmentation is defined as a rigid delineation of units in the informational flow pattern within the company. The flow is unidirectional from divisional production planning through the lower-echelon units of planning, production, and transportation. "Historical" refers to knowledge generated several periods before the act of decision. A conjunction of these two factors may result in losses because of a slow reaction to any change in demand faced by the business.

Mr. Strassman's central thesis is that these losses caused by slow reaction time are the basic costs of a poorly designed informational system. To identify the corrective procedure, the author isolates the "planning lead time" as the major variable subject to manipulation. This planning lead time has three components: (1) the information lag, which arises from uneven demand patterns, (2) the reporting lag, which is essentially the flow of information from the warehouses, the first to feel any change in demand, to the divisional planning group, and (3) the procurement lag, the flow from divisional planning to plant planning. The time required for "production of the hypothetical consumer good is relatively small compared with the planning lead time," the author says.

To overcome the inherent lags in the "traditional" information flow Mr. Strassman proposes a computerized market forecasting system. This system would aid in predicting demand for consumer goods while simultaneously feeding the information to decentralized organizational levels. A centralized information center would receive inputs directly from the warehouses, production and transportation facilities, and divisional planning's marketing information sources and dispatch directly to plant production planning and to individual major suppliers instructions as to when and how much should be

shipped or produced. Information under such a system would flow continuously among various levels of the organization. External changes could be identified and adjusted to much more rapidly than under a more rigidly segmented system.

However, the management considering the utilization of the continuous-flow computerized system must avoid certain pitfalls. Not only must the total costs of the new system be less than the variable costs of the old, but two common biases must be overcome: the accountant's bias and the operations researcher's bias. The accountant's bias is the tendency toward excessively detailed data as the basis for decision making. For a multiproduct firm that requires frequent and numerous reports, excessive attention to detail stifles the ability to absorb and transmit the basic information required. The operations researcher's bias centers on the utilization of mathematical models with their inherent properties and limitations. The limitations of the model are not of direct interest to the decision maker. The system should reflect the needs and aims of information at all organization levels, not the biases of the designers. As Mr. Strassman states, "The relevant time span of decisions and the appropriate level of detail answering the question when and how much are different when asked by a transportation dispatcher or by a purchasing agent." The information system, therefore, should emphasize the routine needs of the users while remaining capable, on request, of generating both detailed reports and mathematical back-up information.

Mr. Strassman does not use the word "forecasting" to mean prediction of demand. He takes demand as given but subject to fluctuations over time. In other words, he is not seeking to identify or control the parameters of the demand function. His use of forecasting is internal to the operations of the firm predicting production requirements as indicated by changes in the market.

Furthermore, Mr. Strassman assumes time to be an explicit variable in the production function. His model holds all inputs constant but collapses the time variable, which reduces costs as efficiency is increased in terms of time.

PETER H. DURKEE
University of Washington

Management for Tomorrow's Needs by G. J. COWPERTHWAIT, *Management Controls*, February, 1965.

The author analyzes how some of the most important components of management will be affected by technical advances and how present managers can prepare themselves to meet these changes.

The opportunities for strong personal management are considerably decreased today, the author notes, because of rapid technological changes, automation, and the other factors that have made change practically the only constant in the day-to-day practice of business management. "Strong, personal management has been replaced by management teams. . . ." Hence, managers of the future must know and understand what makes a successful team and how to operate effectively as a member of a team. Mr. Cowperthwaite discusses three important management problems especially critical to the success of a team operation: the delegation of responsibility and authority, communications, and measurement and control.

Of these three, the author considers effective delegation as most important since "as management becomes more technical and complex, a greater number of more difficult decisions must be made" and "one individual can make only a limited number of decisions." Unfortunately, as the author points out, proper delegation of authority and responsibility "is probably the most difficult" goal to achieve successfully.

The importance of developing and continually improving manage-

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ment communications has not been given, the author believes, the proper emphasis. He suggests several "important tools in improving communications in the broadest sense," including defining the organization, developing adequate position and job descriptions, preparing detailed administrative procedures where necessary for effective operation, developing an adequate management reporting system, and meeting periodically with employees to keep them informed of management objectives.

The successful operation of a management team also depends upon the establishment of adequate systems of measurement and control. The author suggests that too often profitability has been considered "the only real yardstick of measurement or accomplishment." Progress is being made in the establishment and use of standards of performance for managers and the development of adequate controls in the areas of long-range planning and forecasting, budgetary control, management reporting by area of responsibility, standards of measurement, and management by exception. The author warns that systems of measurement and control must be "integrated most carefully into all possible phases of industrial activity," which is "the underlying factor behind the 'total system' concept that has become practical through the use of the computer."

The skills and techniques required of tomorrow's manager of necessity include "an understanding of data processing and what it will do in decision making areas and a knowledge of mathematical approaches and operations research." A real understanding of the capabilities of modern data processing equipment will enable the manager to see the possibilities of new applications and not mere translations.

Mr. Cowperthwaite suggests that the accountant should have a particular interest in the advances taking place in the field of management. He notes, "We are seeing

the beginning of a change in the fundamental approach toward the functional organization areas that accounting embraces." The emphasis is on "broader administration and the provision of the many services required by operating divisions, such as . . . the use of advanced data processing techniques, management training. . . . These areas are tending to be combined with finance and administration to form one area of administrative management." If the accountant is to direct this wide area of management, the author suggests, he "must equip himself through education, experience, and management training for the much broader tasks of the future."

G. F. DOMINIACK, CPA
Michigan State University

New Concept of Accounting Proves Better Than Billing, Administrative Management, February, 1965.

This article describes a method for handling payments devised by R. C. Edwards, manager of Lockheed Aircraft Corporation's accounts payable department.

The purchasing technique described in this article works on the assumption that a purchase order is a contract in itself which is completed on delivery of the goods. The buyer can then make payment without waiting for receipt of a bill or invoice.

First, a computer records on punched cards all the information from the company's purchase orders. The orders are recorded by item rather than by total. As the items are received, memos which serve as proof of delivery are fed to the computer in the form of punched tape. The inputs are merged by the computer, which matches the data, declares payment is in order, and issues a payment card.

Payment cards are stored by due date and checks are prepared daily. The computer screens all payment cards against the card files representing suppliers' accounts, which

show debit balances, holds, or assignments. The check is accompanied by a remittance advice which cites for each item the vendor's packing sheet date and number as well as the original purchase order number and item number.

The elimination of error is basic to the efficiency of the system. In the early stages of development it was realized that suppliers' invoices had to be excluded. These invoices normally introduce a 5 per cent error factor. Furthermore, they come in a wide variety of formats, and they create problems by introducing uncontrolled data into the system, thus precluding the unilateral correction of the data to be matched. Positive control must be maintained over all inputs to ensure the quality of the data entering the system. Purchasing paperwork is reviewed by the accounts payable section, and proof-of-delivery documents get a pre-receipt audit.

Substantial savings in time and money are claimed for the system. At Lockheed it permits on-time payment for purchases totaling roughly \$1 million daily, and since its introduction the total of partially processed payments at the year-end has dropped from \$26 million to \$6 million. New payments can be processed within 24 hours of receipt of the merchandise, and in addition the new system saves Lockheed 40 per cent of the cost of paying bills. Prompt cost classification, more effective budgetary control, and maximum cash discounts are some of the secondary benefits.

If Lockheed's new system for handling payments is as efficient as this article claims, then managers who are concerned with high overhead costs would do well to examine it closely for possible use in their own companies. Indeed, were the system adopted universally it would be necessary to bill only delinquent customers, thus achieving a further reduction in overhead costs.

ARTHUR V. CORR
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