

# Management Services: A Magazine of Planning, Systems, and Controls

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Volume 8 | Number 1

Article 9

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1-1971

## What People Are Writing About

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### Recommended Citation

Gandhi, Natwar; Fane, Gary R.; Dittman, David; and Hallbauer, Rosalie (1971) "What People Are Writing About," *Management Services: A Magazine of Planning, Systems, and Controls*: Vol. 8: No. 1, Article 9. Available at: <https://egrove.olemiss.edu/mgmtservices/vol8/iss1/9>

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# what people are writing about

## BOOKS

**Techniques of Profitability Analysis** by SAM R. GOODMAN, John Wiley & Sons, Inc., New York, 1970, 219 pages, \$11.95.

*If the controller and the marketing manager were the same man, he would operate in the way indicated by this book. Aimed at just such an integration of the two functions, this remarkable little volume by the controller of Nestle, Inc., would be invaluable to the financial executive who would like to be really useful to the marketing*

*function—or to the marketing man who would like to make his decisions more scientific.*

The title of this book might better be "Some Techniques of Profitability Analysis," for the discussion is in no way comprehensive, and the development does not seem to follow any logical plan. It seems, in fact, that the author is not exaggerating when he remarks that "... this work is the culmination of thoughts which occur to me at odd hours."

From the point of view of the business reader, however, these are not real objections. For what the businessman usually seeks when he

reads is ideas, not a textbook, and this book is full of them.

Mr. Goodman starts with a chapter explaining why nearly every company should have a special "marketing controller" who is quantitatively trained and "knowledgeable in the scope of the total corporate entity." This is a subject on which Mr. Goodman has written two earlier books; evidently it is dear to his heart.

Then he goes on to discuss some ways in which the marketing controller (or, indeed, any controller who is inclined in that direction) can be useful in helping to monitor company profitability. (Mr. Goodman draws a clear distinction be-

## REVIEW EDITORS

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tween profit, a residual . . . a static, historical term, more geared to a reporting function than to decision-making," and profitability, a "dynamic" concept "essentially an internal measure of new wealth creation.") In the course of explaining profitability he tells why he is opposed to both absorption costing and direct costing for internal decision making purposes. He advocates the use of "relevant costing," which seems to be direct costing with all marketing costs handled in the same way as production costs instead of being lumped with administrative expenses under sunk costs.

### **Profitability analysis applied**

A chapter titled "Making the Operating Statement Useful at All Levels of Responsibility" devotes a few pages to the general idea of responsibility reporting, then switches to a discussion of probability theory. A later chapter applies profitability analysis to sales analysis and incentive plan development.

The author's primary attention, however, is given to return on investment analysis and to product life cycles. He favors the discounted cash flow method of calculating ROI, for reasons he explains briefly, and he shows in some detail how to apply it in the analysis of potential acquisitions, capital projects, new product development, lease vs. purchase decisions, pricing, geographic marketing areas, and marginal salesmen.

### **Life cycles emphasized**

Mr. Goodman's most original contribution, he feels, is his emphasis on product life cycles and their use in profitability analysis. ". . . the entire application of product life cycle theory and its transition to practical reality is, to the best of my knowledge, completely new," he says. One may question this claim (see, for example, "An Accountant's Role in Product Obsolescence" by Harris J. Nadley,

Management Services: A Magazine of Planning, Systems, and Controls, Vol. 8 [1971], No. 1, Art. 9, M/S March-April '70, p. 37), but his chapters on this subject are definitely useful; it is probably true that life cycle analysis is neglected in most companies.

Mr. Goodman writes well, and he has a gift for turning a phrase: "Product life cycles are like flying saucers; everyone has seen them but as yet no one has touched them." ". . . the author, in order to ensure his immortality, invented a law of behavior, called Goodman's Law of Acquisitions. Simply stated, it says that there is a 67% probability that the urge to merge will lead to a surge rather than a dirge."

Mr. Goodman writes simply but on a sophisticated level. He assumes a professional level of knowledge on the part of the reader and spends very little time laying a foundation for his ideas. As he puts it, "It would be easy in this type of book to explain the topics in so much detail as to triple the book's size. I prefer to assume degrees of native intelligence on the part of the reader which will permit him to absorb the contents of this book without explaining them to death." Thus he packs a great deal into a small space.

Not every reader will agree with all of Mr. Goodman's opinions, but no one can quarrel with his basic attitude of service to the marketing function or his analysis of the problems to be solved. The specific techniques he presents may seem to another controller to be unsound or inapplicable to his company, but they can easily be modified or adapted to fit. For the executive actively engaged in financial control this is one of the most useful books to appear in a long time.

**Planning Corporate Growth and Diversification** by PETER HILTON, McGraw-Hill Book Company, New York, 1970, 245 pages, \$10.95.

*Very much for the here and now, this book is valuable chiefly for its lists of resources available*

to the diversification-minded company—publications, consultants, financial intermediaries, etc. Most of these lists, the author claims, have never been compiled before.

Theoretical books on how to guide a company's growth through new product development and/or acquisitions are a dime a dozen, and most of them are much alike. Mr. Hilton, however, is not afraid to write something ephemeral, and as a result he has produced something that is probably unique.

### **Acts as middleman**

Mr. Hilton puts out *New Product Newsletter*, a clearinghouse for information about new products and processes that are available for manufacture under license. He also acts as a middleman between companies seeking to spin off unprofitable products or divisions and prospective buyers. (His work in the latter role was described in a recent issue of MANAGEMENT SERVICES; see "Cash for Red Ink Divisions" by Robert M. Smith, M/S September-October '70, p. 46).

Thus, his emphasis in this book is more on the business than on the management aspects of corporate growth, an emphasis that enables him to be highly concrete, and he gives more attention to product (as distinct from corporate) acquisition than is usual in books on this subject. A side benefit of his journalistic background is a livelier and more interesting style than is characteristic of the professorial efforts in this field.

### **Tends to concreteness**

Probably in order to stretch his material to book length, Mr. Hilton does cover familiar ground—elements of corporate planning, appraising corporate values, tax and antitrust considerations, organization of research and development—but he is mercifully brief in doing so. And even here he shows a commendable tendency to lapse

into concreteness. For example, he concludes a chapter on new product development with lists of fast-growing products and industries (as classified by the Princeton Opinion Survey and the U. S. Department of Commerce).

Mr. Hilton also presents a number of case histories in external and internal growth. They are, however, for the most part lumped together in a single chapter rather than used to illustrate specific points, which blunts their message.

The most useful sections of the book are those dealing with financial intermediaries and information sources. Mr. Hilton tells why and how to use business brokers (he even tells how their fees are determined) and discusses the help available from investment bankers, commercial banks, and CPA firms. The appendix contains a list of the some 150 business brokers whose names were most frequently mentioned favorably in a poll of corporate diversification executives.

In a chapter on "resources" Mr. Hilton describes associations, consultants, new product "searchers," and professional publications in the field (including his own organizations, of course). Another appendix lists some 30 new product searchers recommended by members of the Institute for Corporate Diversification. Both this roster and that of the business brokers are the first of their kinds ever compiled, according to the author.

So long as it remains current, this is a handy book for the executive or consultant who is actually directly involved in product or merger acquisition.

**Frederick Taylor: A Study in Personality and Innovation** by SUDHIR KAKAR, The MIT Press, Cambridge, Massachusetts, 1970, 221 pages, \$6.95.

*Moses, Woodrow Wilson, and a number of other giants of world history have been analyzed in Freudian terms by members of the*

Ever since Freud sought to illuminate the development of Jewish theology by examining the supposed personality problems of Moses, imitators have been applying the technique to leading figures in other fields of endeavor. Now it is the turn of management, and the subject chosen is Frederick W. Taylor, "the father of scientific management," who invented time study and indeed created the whole specialty of industrial engineering.

### **Psychology of innovators studied**

Professor Kakar (who is assistant professor of organization behavior at the Indian Institute of Management, Ahmedabad) emphasizes in this short and highly specialized biography the relationship between Taylor's personal conflicts and the development of his system of scientific management. The broad problem he seeks to raise is the relationship of the innovator to his personal development and his society.

Professor Kakar finds that Taylor both loved and hated his father. (Since, as in the case of most historical figures, the available historical facts about Taylor do not come from psychiatrically oriented sources, there is little real evidence about the nature of Taylor's relationships with his parents. The author, like others of the psychiatric school, tends to deduce the cause from the results.)

### **Compulsiveness explained**

From this conflict stems Taylor's compulsive personality: He analyzed and timed everything—from croquet and golf to running a lathe and pushing a wheelbarrow. Or, as the introduction to the book puts it, he "tried to control his instinctual life by mechanistic means, by activity and attention to external detail."

From this conflict also stem the key incidents and relationships of

Taylor's career, from the time when he quit Exeter, ostensibly because of poor eyesight, to work as a journeyman machinist in a factory, thereby becoming "perhaps the only factory worker in America who was a member of the Philadelphia Cricket Club," to the acrimonious conflicts of his later life with those who disagreed with his theories.

### **Father figure sought**

"He was very ambivalent toward authority, and his own potential as an authority figure," says Professor Abraham Zaleznik's introduction, "and he tried to solve this problem by looking for the loved and hated father in his relationships at work." This explains his loyal devotion to a couple of work superiors, his violent conflicts with—and frequent firings by—all his other bosses, and his highly authoritarian attitude toward the work force he himself supervised.

Most important, from this conflict also stems, according to Professor Kakar, the nature of his management theories: his fanatical search for the "one best way" to perform every task, his unilateral definitions of "a fair day's work for a fair day's pay," his anti-unionism, and his unwillingness to let the rank-and-file workers do any thinking for themselves.

### **Ideas get full due**

All this makes fascinating reading, even for those who get impatient with psychoanalytical cant. For Taylor's life and work were interesting in themselves, and they are well described by Professor Kakar in a clear, direct, remarkably non-Indian prose. His ideas are important, and the author gives them full due (despite a tacit implication that their chief appeal is to authoritarian personalities like Taylor himself).

For Professor Kakar does not overdo the psychoanalysis. He refrains from turning Taylor into a mere clinical case, and he knows

enough about manufacturing management to concede that many of the methods Taylor pioneered were economically necessary at the time. Actually, it is Professor Kakar's psychiatric credentials rather than his management knowledge that might be questioned. However, the psychohistorical approach has not kept him from producing a highly readable biography of a towering figure in management theory.

**Creative Systems Design** by DEREK ROGERS, Anbar Publications Ltd., P. O. Box 23, Wembley, England HA9 8DJ, 1970, 162 pages, 40 shillings (\$4.80).

*This little book about the "design of administrative systems, treated as a process of creative thinking," offers little information not already available in American books on systems design, but it offers that information with the deft simplicity and concreteness of which the British are sometimes capable.*

This book, according to its publisher, is unusual because it examines "the all-important creative side" of systems work. If this were the case, it would not add much sales appeal, for creativity is a notoriously mushy subject. Actually, however, what is unusual about this little volume is its common-sense, practical approach to a field that is often treated ponderously and with unnecessary complexity.

The book is aimed at "management services" people, which seems to mean those engaged in organization analysis, methods analysis, and systems analysis. (Evidently the British definition of management services is somewhat narrower than the American.)

The author explains what systems design is and how it fits into the organization and describes the creative process as a cycle—from problem definition through fact gathering, evaluation, "illumination," and solution definition. Then he reviews the process of develop-

ing a system in chapters headed "Getting the Feel of the Organization," "Defining the Assignment," "Establishing the Facts," "Dreaming," "Making Things Happen," "More Things Happen," and "Keeping Tabs."

### *Ideal designer profiled*

He concludes with a profile of the ideal systems designer: "The systems designer must be discontented. He must believe that the world can be a better place. He must be tenacious, and hang on to his ideals. He must make contact with managers on a person-to-person level. He must have the intellectual ability to conceive new ways of doing old jobs. He will probably have had a professional education. He will almost certainly be management material. He is likely to be young. He will be paid well for being a creative force in the company."

In part of the book the author takes the remodeling of a kitchen as a case example of a system to be redesigned. With characteristic good taste, however, he does not push the example farther than the analogy justifies.

### *Full of good sense*

The book is full of nuggets of good sense. Some examples:

"... the systems designer must know a good deal about the behaviour of the managers he is dealing with. It is, of course, perfectly feasible, as far as the fundamental process of logical analysis goes, to design a good system without knowing anything of the people who have commissioned it and are to agree to it; but the systems designer will be lucky if it is successfully adopted."

"... the systems designer's first need is for information about the department he has been asked to study—what does it do, and why? The temptation is to rush off to the user department and start asking these very questions. This would be wrong. . . . The systems design-

er must make no contact with the user until he has exhausted the resources of the systems department."

"The presentation of this [written] report . . . must follow the verbal presentation. If it is issued for study before the meeting it will only raise detailed objections, before the systems designer has any assurance that his basic approach has been understood; and if it is issued at the meeting for discussion, it is unreasonable to expect managers to comment sensibly on a document they have only just seen."

"When the new system starts operating, the systems designer will be inundated with messages. He must not be upset at this. His first job is to decide what each message actually says. Messages will be of three types: Firstly, grouching. The systems designer should not be rude, but he need not act. Secondly, errors of detail. The systems designer may have to do some quick thinking. Thirdly, apparent major errors. They may be either real or supposed. If they are only supposed, the systems designer must convince management of this. If they are real he is in the soup, and must think very quickly indeed."

This little manual would be invaluable for the orientation of junior management services staff—and it is worth a quick reading for anyone in the field.

**Production and Inventory Control Handbook** by JAMES H. GREENE (Editor-in-Chief) and others, McGraw-Hill Book Company, New York, 1970, 1,104 pages, \$29.50.

*This mammoth compendium, sponsored by the American Production and Inventory Control Society, covers every conceivable aspect of production and inventory control—and a good many relatively peripheral subjects as well.*

Production and inventory control, at least as it is now practiced in

sophisticated companies, is a relatively new field. Indeed, the American Production and Inventory Control Society, whose members wrote this handbook, was not founded until 1957. Techniques have changed rapidly in the past few years and are continuing to change. These facts make the availability of a comprehensive and up-to-date handbook in this field most welcome.

### *Coverage impressive*

As the publisher's blurb on the book jacket boasts, the "sheer coverage of this Handbook defies summation." Not only does the handbook take up every activity that an outsider might classify as part of production and inventory control; it also discusses in considerable detail a number of subjects others might consider more closely related to other branches of management—production, finance, even general management. Examples are transportation, plant layout, materials handling, systems design, data processing, and organization structure.

This would suggest that, like representatives of virtually every other management specialty, the practitioners of production and inventory control are eager to expand the scope of their authority. From the reader's point of view, of course, this attitude is all to the good; it gives him, in one volume, virtually a combined handbook of production management and inventory control, with incidental management articles as well.

### *Applications included*

The handbook is more than comprehensive; it also is thorough and detailed. An effort has been made not only to describe techniques but also to show "how to adapt them, in whole or in part, to your company's own special requirements."

And the authors do seem to know what they are talking about. About half of them are executives of manufacturing companies actively en-

gaged in activities pertinent to their subjects. (The others, mostly professors and consultants, include representatives of four large accounting firms, who wrote the chapters on organization concepts, long-range planning, physical control of inventories, non-automated production and inventory control systems, and computer-based systems.)

This is not to say that the book is without flaws. The publisher claims that "its many forms, sheets, and checklists" (there are 634 illustrations) are "suitable (and readily adaptable) to widely diverse situations likely to arise on the job." Most of them, however, are too small and too hard to read to be of real use.

The organization of the handbook, furthermore, seems to be more that of a textbook than of a reference; the development is evolutionary rather than fragmentary. This makes it rather easy to read as such volumes go but difficult to look things up in. The table of contents is useless; the index is only adequate; so someone who wants to use the book as a desk-top reference would be wise to spend several hours familiarizing himself with it first.

These are minor criticisms. The book is a bargain even at its far from insignificant price.

### *Briefly listed*

**Blueprint for Professional Service Corporations** by WILLIAM J. BURKE, CPA, and BASIL J. ZALOOM, CPA, Dun & Bradstreet Business Education Division in Association with Thomas Y. Crowell Company, New York, 1970, 206 pages, \$5.95.

This handbook, largely in question-and-answer form, is intended for the information of doctors, lawyers, and other professionals who are considering the pros and cons of adopting corporate status and for attorneys, accountants, bankers, and investment advisers whose clients seek their advice on the subject. Among the considerations

stressed are the tax advantages of incorporating (chiefly the opportunity to build up tax-free pension or profit sharing plans), the tax problems involved in a change of status, and the impact of receivables and other intangible assets on the structure and operation. The authors are with Lybrand, Ross Bros. & Montgomery.

**A Robinson-Patman Primer: A Businessman's Guide to the Law Against Price Discrimination** by EARL W. KINTNER, The Macmillan Company, New York, 1970, 396 pages, \$10.95.

This book, by a former chairman of the Federal Trade Commission, is designed not to "teach businessmen how to be their own Robinson-Patman lawyers" but to heighten their awareness of these laws so that they will know when to consult a specialist. Topics covered include competition, the cost justification and meeting competition defenses, knowing inducement, brokerage and payments in lieu thereof, promotional allowances, enforcement, and compliance. No legal knowledge is assumed. Texts of pertinent statutes appear in the appendix.

**Reorganization** by JAY JEHIEL ZIF, ARTHUR H. WALKER, ELIEZER ORBACH, and HOWARD SCHWARTZ; **Contract Negotiations** by JAY JEHIEL ZIF and ROBERT E. OTLEWSKI; **The Personnel Department** by JAY JEHIEL ZIF, ARTHUR H. WALKER, and ELIEZER ORBACH; and **Managing the Worker** by JAY JEHIEL ZIF, ARTHUR H. WALKER, and WILLIAM T. ARCHER, The Macmillan Company, New York, 1970, each 50-70 pp., paperbound, each player's manual \$2.50, instructor's manuals gratis.

These little booklets, each labeled "A Creative Studies Simulation," are manuals for participation in role-playing-type management games designed to teach something about corporate organization, labor-management negotiations, em-

Management Services: A Magazine of Planning, Systems, and Controls, Vol. 8 [1971], No. 1, Art. 9. The use of this simple manual system of planning for complex yarn manufacturing resulted in lack of control over product mix, unplanned machine changes, simultaneous stockouts in some items and overstocks in others, heavy overtime payments, and insufficient labor utilization. Because the manual system was not capable of sufficiently quick response to changes, planning was ineffective.

ployee relations, and supervision, respectively. A problem is introduced, and participants assume roles in company management to solve it. Designed for college use, they are also suitable for company training programs.

**Triple Your Reading Speed** by DR. WADE CUTLER, Arco Publishing Company, Inc., New York, 1970, 127 pages, \$5 hardcover, \$3 paperbound.

This self-service version of the "famous Cutler Accelerated Method" is claimed to provide all the study-and-practice exercises needed to increase reading speed three times without decreasing comprehension. It contains tests of reading speed, explanation of the principles of fast reading, and drills to accelerate reading.

**Applications of Management Science in Marketing**, edited by DAVID B. MONTGOMERY and GLEN L. URBAN, Prentice-Hall, Inc., Englewood Cliffs, N. J., 481 pages, \$12.50.

Twenty-six articles, all published within the past five years, deal with models for measuring market response; models for advertising, pricing, distribution, personal selling, and new product decisions; implementation of models; and future trends. Many are highly mathematical.

**Handbook of Modern Accounting** by SIDNEY DAVIDSON (Editor-in-Chief) and others, McGraw-Hill Book Company, New York, 1970, 1,280 pages, \$22.50.

The stress in this handbook is naturally on fiduciary accounting. However, about a fifth of the chapters deal with subjects of concern to management accountants—chapters on the computer and accounting, actuarial and statistical analysis in accounting, mathematical models and accounting, cost analysis, budgeting, production costs, standard costs, distribution costs,

and divisional reports. All these chapters, incidentally, are by professors.

**Fundamentals of EDP and FORTRAN** by LEONARD J. KAZMIER and ANDREAS S. PHILIPPAKIS, McGraw-Hill Book Company, New York, 1970, 180 pages, \$4.95 paperbound.

This programed text, designed for self-instruction, explains what computers are, how they work, and how to program using FORTRAN IV.

## MAGAZINES

**Computer Aids to Production Planning and Control** by A. J. STEDMAN, *The Australian Accountant*, June, 1970.

*The author describes here how a yarn manufacturing company has used a computer as a tool to help it produce yarn in a more economical way. All of the three systems—planning, scheduling, and recording-reporting—have justified themselves in terms of financial savings.*

Fibermakers Ltd. is a multi-million-dollar Australian manufacturing company making raw nylon and polyester yarns. The majority of its production ends up in Australian apparel. Since apparel is a field notoriously dependent on the whims of fashion, the company's demand structure is subject to extreme fluctuations. Almost all of the raw material, however, is imported from the United Kingdom and therefore has to be ordered three to four months before it is required. The company's expensive, custom-built plant capacity requires efficient utilization.

### Planning

Before the computer application in the planning area, demand forecasts from sales people were converted into a production plan which

The computer changed all that; it proved to be an ideal tool to plan complex yarn manufacturing activities. With the computer, thirteen-week data regarding demand forecasts, machine allocations, warehouse stocks, and sales are processed and revised every week. Weekly program outputs show stock movements, machine allocations, and labor requirements for every product week by week for the next thirteen weeks. Consequently production operations and raw materials and finished goods inventories have settled down to more predictable levels while the product mix has been greatly diversified.

### Scheduling

The spinning and drawing phases of yarn manufacturing involve large numbers of machines which require frequent attention from process operatives to remove from the machines packages that have their full complements of spun or drawn yarn and replace them with fresh tubes. This is called "doffing." Between doffs there is a lot of waste time. Sometimes crews are idle and machines are busy; sometimes machines are idle and crews are busy. Besides this general lack of coordination between man and machine, a manual system also presents the problem that it is impossible to allocate any priority to a particular product depending on the immediate sales needs. Furthermore, there are a large number of machines making a large number of products all at the same time, with all products having different running times between doffs.

These facts make it obvious that the scheduling operation is too complex for the human mind to perform in anything approaching an optimum way. The problem lies in distributing the permissible idle time among the various machines in such a way as to match the throughput of the drawing area with that of the spinning area, together with any excessive quantities of yarn awaiting drawing. The computer system accomplishes this matching by allocating priorities to the drawing machines, based on the proportion of a machine which is theoretically surplus to the actual spinning requirement.

### **Recording and reporting**

Production movements formerly recorded in this company consisted mainly of identifying information on product, batch, grade, and quantity. The original manual system involved the use of multi-part tickets attached to each carrier of yarn. Product details were pre-printed, but other data were handwritten. The system was slow, and the results were inaccurate. Here, too, a computer-based system has proved to be of value in producing acceptably accurate reports. Financial savings claimed over the three to four years of operation, thanks to improved control over the conversion of raw material into finished product, have been considerable and are considered to have fully justified the new system.

NATWAR GANDHI

*Louisiana State University  
at Baton Rouge*

**Science, Government, and Citizen Feedback** by CHANDLER HARRISON STEVENS, *Operations Research*, July-August, 1970.

*Today virtually every group of concerned citizens seems to agree that the present governmental structure is inflexible and unresponsive to current needs. One government has begun to experiment*

and the people. The feedback must work successfully before the other systems can operate at an optimum.

### **Citizen aides used**

The feedback system is begun by placing "citizen aides" close to the people. At first, it is expected, they will handle "service" inputs, such as citizen requests, inquiries, and complaints. As the citizen finds that the "service" inputs are processed efficiently, the citizen begins to make "involvement" inputs, which include opinions and voluntary suggestions. This might strain the present organizational approaches to problem solving, producing newer ideas. The final output from the system may be issue balloting and government-sponsored opinion polling. Obviously there are problems in government-sponsored opinion polling, the major one that of how to eliminate the fear of government surveillance. However, the benefits of knowing which social goals the public feels should have priority would considerably outweigh the difficulties of administering the program.

### **Other programs follow**

As the citizen feedback program reaches a level of operation at which the information flowing into and out of it has a good level of reliability, the other programs can become operational. The citizen's feedback could be fed into a computer that in turn would be part of a visual information delivery system installed in the Information Room. As the Planning Committee met to discuss a particular problem, the information basic to the decision could be displayed, citizen input could be viewed, and the possible decisions produced by the decision model stored in the computer could be flashed onto the screen for consideration. If at this point any member of the Planning Committee desired to make variations in the computer's decision, he could

Mr. Stevens describes the efforts of the Puerto Rican governor to decentralize some governmental functions and decisions by employing decision models in political and social decision making situations. The speed of electronic communications makes it possible for all citizens to be more aware of societal, governmental, and environmental problems. At the same time the bureaucracy that has grown up between the people and the center of government (the governor, cabinet members, etc.) and at the boundary of government-citizen relationships (local government officials) has become stifling. The result is a citizenry that is frustrated in its attempts to be heard or to stimulate action on a timely basis.

### **Four programs launched**

The Puerto Rican government has started four programs to try to overcome some of the frustration. First, a Governor's Advisory Council for the Development of Government Programs has been formed; second, a Citizen's Feedback System has been designed; third, PRIDE (Puerto Rico's Information and Decision Environment), otherwise known as the Governor's Information Room, has been developed; fourth, a feasibility study has been completed aimed at the organization of an Institute of Social Technology as a half-way house between science and government.

### **Interface held vital**

Three of the four systems deal directly with the central government, the other, the citizen feedback program, with the "citizen-government interface." It is at this point of interface that communications skills can best be employed to develop rapport between the gov-



Management Services: A Magazine of Planning, Systems, and Controls, Vol. 8 [1971], No. 1, Art. 9  
do so by keying in new data reported in his survey, used by 55 than one department or committee.  
through a computer terminal in the per cent of the companies, compared to 9 per cent in a 1960 study. (Payback period ranked second, at 51 per cent.) Either DCF or present value was used by 61 per cent; often, however, payback was combined with it.

Many attributes of the system outlined are worthy of further discussion, not the least of them its effect on government's ability to include the desires of citizens in the governmental decision making process. With the advances that have been made in both electronic communications and decision model building, this seems like an achievable goal. However, it is achievable only if we recognize that societal decision making must begin to shed many of its political overtones, and give way to the systems approach. The field of societal decision models is in its infancy, but those who now work with decision models can use their base of knowledge to begin to solve the larger problems.

GARY R. FANE  
*University of Florida*

**Industry Practice in Allocating Capital Resources** by RONALD B. WILLIAMS, JR., *Management Planning*, May/June, 1970.

*The author, on the staff of Beatrice Foods Company, reports the results of a survey of capital budgeting practices in an assortment of American corporations.*

More and more companies are using the discounted cash flow method to evaluate capital investment projects, Mr. Williams reports in this article, a summary of the results of a survey he made in 1959.

Replies were received from the financial vice presidents, treasurers, or controllers of 100 companies. Most of the companies were among *Fortune's* top 500 manufacturers, but about 20 per cent were smaller companies and about 5 per cent were not manufacturers.

Comparison of Mr. Williams' results with those of earlier surveys shows a steady trend toward DCF. It was the most common method

#### *Size irrelevant*

The size of the company seemed to have nothing to do with whether or not it used discounted cash flow; 61 per cent of the companies smaller than the *Fortune* 500 used it. The controlling factor seemed to be capital turnover; DCF was more common in capital-intensive industries (with low asset turnover).

Eighty-nine per cent of the respondents prepared capital budgets. (Another 9 per cent at least made projections of capital expenses.) Thirty-two per cent used a portfolio approach in selecting capital projects. (In the portfolio approach competing demands for capital resources are judged—possibly ranked—against each other.)

Fifty-seven per cent of the companies made projections of capital expenditures for at least four years into the future. Here, again, the nature of the industry was a controlling factor; 72 per cent of the companies in capital-intensive industries made at least four-year estimates.

#### *Who prepares budget*

Asked what department is responsible for preparing the budget, 39 per cent said engineering, 33 per cent said accounting, 17 per cent identified a finance/budget committee, and 17 per cent replied it was a divisional responsibility. As for analyzing capital expenditures, accounting was well ahead with 53 per cent, followed by engineering with 36 per cent, finance or budget committee with 34 per cent, and the treasurer's department with 23 per cent. Many companies, of course, mentioned more

The minimum after-tax return on investment that the companies surveyed expected a capital investment to earn was 10-12 per cent. This was slightly higher than their estimates of the cost of capital—8-11 per cent. More than 80 per cent claimed to have a post-audit procedure for capital projects.

These findings, the author concludes, indicate a growing sophistication in corporate capital budgeting. (Eight per cent of the companies even said they used probabilities in conjunction with DCF.) However, there is still a way to go. More than half of the companies that did not use DCF said the reason was that they did not understand it.

**A Markovian Model for Hospital Admission Scheduling** by PETER KOLESAR, *Management Sciences*, February, 1970.

*A mathematical model that was developed to simulate the bed occupancy fluctuations in a maternity suite for a day and for a week is described. It possesses three advantages over the approach used in traditional queueing theory and computer simulation: (1) It is not limited in its service and arrival distributions, which means it can take on a variety of different decision rules; (2) It is easily coupled with linear programming, which enables it to yield "good" decision rules, if not optimal ones, through the simplex procedure; and (3) It is computationally more efficient although less flexible than a simulation model.*

Before the development of the Markov model for maternity bed occupancy is described, two traditional queueing models are presented. The first, *the rate control model*, a "finite-state birth and death process," consists of M parallel service channels (beds) and two independent parallel input streams, emergency arrivals and

scheduled arrivals. The second, *the feedback model*, consists of  $M$  parallel service channels (beds), where the holding time for a bed is a random variable with an exponential distribution having an expectation of  $1/\mu$ . A Poisson distribution having an expectation of  $1/\lambda$  represents emergency arrivals. Scheduled arrivals are determined by total bed capacity minus the beds estimated for emergency arrivals.

### Basic model

The basic Markovian decision model presented is for a one-day period. It consists of the following random variables: (1) the number of beds occupied during the one-day period,  $X_t$ ; (2) the non-scheduled arrivals during the day,  $A_t$ ; and (3) the discharges and transfers during the day,  $D_t$ . Occupancy in the ward is controlled by the deterministic decision variable  $S_t$ , the number of scheduled arrivals during the day. When a decision rule of the following form is employed: If  $X_t = i$ ; set  $S_t = k(i)$ ;  $i = 0, 1, \dots, L$ ; where  $L$  is equal to the total number of beds in the ward, then  $X_t$  is a Markov chain with stationary transition properties. The control rule can then be reformulated and optimized using a linear program. The time period is easily extendable to longer periods of time, and if more variables are added (at the loss of computational ease) the model can be used over a planning horizon of three to six months. The basic model is also extendable to the point at which it can be used to schedule several arrivals simultaneously.

### Use in planning

With the advent of on line-real time computers for hospitals, models of this sort should be most helpful to hospital decision makers. Such a model can be used to formulate a semiannual or quarterly planning tableau to help hospital administrators schedule

admissions in a manner that will provide ample beds for emergency admissions while the physical plant is operated near capacity. Such a device would certainly be a step toward improving economic efficiency in the use of hospital facilities.

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**Quadratic Binary Programming with Application to Capital-Budgeting Problems** by D. J. LAUGHUNN, *Operations Research*, May-June, 1970.

*This paper presents "an algorithm for solving the quadratic binary programming problem," the structure of which is most commonly found in capital budgeting problems in which the decision maker must identify the  $(\mu, \sigma^2)$  efficient set of the type initially discussed in H. M. Markowitz's Portfolio Selection.*

Of the seven pages making up this article all but the first paragraph describe the general problem and the suggested algorithm for its solution. The first paragraph gives a brief discussion of the basic type of capital budgeting model being considered—the group of models which assume that  $\mu$ , the mean portfolio return, and  $\sigma^2$ , the portfolio variance used as a measure of risk, are included as factors in the decision maker's expected utility function. The quadratic binary program is suited to situations where investment proposals are being examined for the purpose of accepting or rejecting each one in its entirety.

The algorithm is presented in the form of a flow chart supplemented by verbal descriptions of the more important points, such as the method of finding a best completion, which the author admits is not a trivial matter in the quadratic binary program, and various exclusion tests designed to find out whether the iterations have reached the efficient set or whether further im-

provement is possible. The constraints to the problem include one group which guarantees the acceptance or rejection of each investment in its entirety.

Nowhere in this article is there any mention of any testing of the algorithm. If tests had been made, particularly relating to the capital budgeting problem, a decision maker would want to know the results before substituting this technique for whatever method he had been using. This article would appear to be a starting point for further study in order to determine if this algorithm is truly workable, especially as compared to other methods currently being used to arrive at the efficient set  $(\mu, \sigma^2)$ .

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