Address by the Comptroller General of the United States, Elmer B. Staats, Before the 49th Annual International Conference of the National Association of Accountants in New Orleans, La., June 17, 1968

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MANAGEMENT INFORMATION NEEDS IN AN ERA OF CHANGE

I appreciate your invitation to be present this afternoon to discuss a subject of growing importance to the accounting profession and to managers. It gives me another opportunity to become acquainted with your Association. It provides you, in turn, with a summary of our current thinking and our efforts relating to improved financial management in the Federal Government.

Your Association has a distinguished record in providing a forum for the interchange of ideas and experiences by representatives of government, commerce, and industry. I particularly want to congratulate you on your foresight in recognizing the need for continuing training and education in the accounting profession and for your efforts in encouraging these developments.

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With today's increasing costs as well as growing apprehension over the size and direction of governmental programs--government and industry more than ever need to cooperate and to learn from each other. This need has been expressed by many people and in many different ways. I should like today to focus upon the role which the accounting profession can play in providing the management information needed for effective government and for a growing economy.

Management information requirements have risen sharply and will continue to rise as the pace of change accelerates. These requirements must be met if business enterprises are to remain competitive and if government is to provide the public services increasingly demanded.

In order for businesses to remain competitive and to progress, or even, in some cases, to survive, more information is needed about the environment in which they operate. These are the external factors that must be dealt with if businesses are to remain competitive and to grow. More information is needed on day-to-day operations--internally generated information relating to such aspects as purchasing, manufacturing, warehousing, distribution, and sales.

Accurate, complete information--effectively communicated--is the lifeblood of any organization, the basis on which management must make decisions.

THE AGE OF SCIENCE AND TECHNOLOGY

Developments in science and technology are in the forefront of our era of change. The age of science and technology dates approximately from the beginning of World War II. Although many new discoveries and inventions existed in principle, impetus for their development arose from the needs of war and the plentiful supply of funds made available through government research and development contracts.

Government funds for research and development--usually called R & D--have increased steadily until they now amount to about $17 billion a year. They finance approximately two-thirds of all research and development in the United States. Seventy percent of these funds are spent by private industry and educational institutions.

Most industries, notably those dealing in chemicals, pharmaceuticals, and electronics, are constantly searching for new products, new discoveries, and new applications. New products displace older products. New industries compete with older industries. Through diversification and mergers, industries intermingle.

OPPORTUNITIES AND PROBLEMS

In addition to developments in science and technology, other factors have affected the manner in which business is conducted and its direction of effort. Among these are:

-- ever-increasing population;

-- concentration of people in metropolitan areas;

-- better educated people;

-- more affluence in society;

-- more leisure time and more discretionary income;

-- demand for better products and more services;

-- increased foreign competition;

-- new markets and expanded foreign markets; and,

-- growth in government functions and services.

These factors have presented opportunities and problems.

Along with these developments, congestion in metropolitan areas has intensified such problems as urban housing, job opportunities, transportation, and air and water pollution.

In the last several years, Congress has enacted far-ranging legislation designed to attack these and other social problems, such as:

-- the Economic Opportunity Act,

-- the Housing and Urban Development Act,

-- Medicare,

-- the Elementary and Secondary Education Act, and

-- the Higher Education Act.

Industry as well as Government must have more information to make effective management decisions on the problems which these laws were designed to attack. To provide effective solutions, we must know the causes of the problems. We must determine the results that can be attained by various proffered solutions, and the relative costs. Benefits measured in terms of social values as well as in dollars must be included in the traditional "cost-benefit" formula.

MEETING THE GOVERNMENT'S INFORMATION NEEDS

The Congress in considering such legislation requires a management information system. The General Accounting Office is an important part of that system. GAO is responsible, with limited exceptions, for auditing all programs, activities, operations, and financial transactions of the Federal Government and for making reports to the Congress containing recommendations for greater economy and efficiency in Government operations.

GAO assists in drafting legislation, makes factual investigations for Congressional committees, testifies before committees, and handles numerous inquiries from Members of Congress as well as from committees. At the same time, GAO has far-reaching responsibilities for prescribing accounting principles and standards and assisting the Federal departments and agencies to develop improved management information systems.

These responsibilities will be increased if the proposed "Legislative Reorganization Act of 1967" becomes law. The Senate report on the bill reflects the concern of the Congress for an even more modern information system than is now available, one that would provide each Member of Congress with data necessary to making informed judgments particularly in connection with budget and appropriation questions.

If enacted, this bill would require GAO to provide information to any Member or committee on the location and nature of data available in the various agencies on their programs, activities, receipts, and expenditures. In addition, GAO would be required to provide experts in analyzing or conducting cost-effectiveness studies of Government programs.

Another concern of the Congress, as well as of the public, has been for a clearer, more informative presentation of the Federal budget. The President's Commission on Budget Concepts was established in March 1967 in recognition of this need. Its sixteen members included leaders in accounting, corporate finance, investment banking, journalism, education, and government. I was privileged to be included among the sixteen members.

The President approved the Commission's report. All of the changes which the Commission recommended that could be undertaken within the time available were incorporated in the budget submitted to the Congress in January this year.

The most significant change was the presentation of a unified budget to replace the three different budgets that had been used in the past--the administrative budget, the consolidated cash budget, and the national income accounts budget. These three budgets had often served as competing measures of the total scope of Federal financial activity. They could be used together only with a fairly elaborate reconciliation that tended to confuse more than enlighten.

The new unified budget is an integrated, comprehensive financial plan designed to serve the several different purposes of a national budget. It places greater emphasis on the amount of new appropriations requested of the Congress and the amount becoming available through prior congressional action.

This comprehensive financial plan presents the receipts, expenditures, and direct lending activity for the coming year. Its expenditure account, composed of the receipts and expenditures, produces in simple form the figures needed for an analysis of the economic impact of the budget. Loan disbursements and repayments are shown separately because they have a different impact on the economy.

The expenditure account includes the activities of the social security, highway, and other trust funds, previously excluded from one of the three budgets. Trust fund receipts are estimated at $54 billion and trust fund expenditures are estimated at $47 billion for fiscal year 1969.

A Commission recommendation of particular interest to accountants is that budget expenditures and receipts be reported on an accrual rather than a cash basis. Accrued expenditures--created when the Government incurs liabilities to pay for goods and services--represent a much more accurate measure of the impact of Government purchasing activities on the economy than obligations or cash disbursements. The accrual basis will result in expenditures such as those for construction and hard goods procurement being reported at the time of constructive delivery; that is, as the work actually is performed to Government specifications, rather than at the time advance, progress, or final payment is made. In some cases, however, expenditures will be recorded at the time of physical delivery.

The plan calls for the accrual basis to be used in the Monthly Treasury Statement as well as in the budget, thus providing frequent current reports on actual expenditures.

Government agencies have been instructed to use accruals on a trial basis in their overall financial reporting, beginning July 1, 1968. The objective is to eliminate such impediments as may arise before the 1971 budget is presented to the Congress in January 1970.

Special groups, including members of my staff, have been studying the problems that may be encountered in obtaining information on accrued expenditures by Government contractors and grantees. Perhaps some of you have been consulted during these studies.

The Commission expressed the belief that it would be highly desirable to have both the Federal budget and the Federal sector of the national income accounts on an accrued expenditure basis. The Federal sector is used in compiling the Gross National Product and other economic indicators.

The Commission noted that in a period of rapid defense build-up such as occurred during fiscal year 1966, the accrual basis would have provided more timely and accurate information for assessing the economic impact of the budget than either cash disbursements as reflected in the budget or deliveries as recorded in the national income accounts. The Commission recommended that conversion of the national income accounts to the accrued expenditure basis be pursued at the same time that conversion of the budget is being developed.

The implications of the President's approval of the Commission's recommendations are far-reaching. For those of us who have worked in the field of budgeting for a long time, this is an almost unbelievable accomplishment. The fact that a Commission made up of members with such diverse backgrounds agreed almost unanimously on each of its major recommendations makes the accomplishment exceptionally remarkable. The changes make the budget a more meaningful document, one that will invite more intelligent public debate and congressional review. Because of the advantages to both the public and the Government, I strongly urge you to read the Commission report and to assist - as an organization or individually - in assuring the fullest practical implementation of the report.

INFORMATION NEEDED IN CONTRACT NEGOTIATION

Better information is needed also to provide greater assurance that prices paid by the Government for goods and services are fair and reasonable. The Government will spend more than $50 billion for goods and services in fiscal year 1968. A large part will be spent under negotiated contracts where assurance of fair and reasonable prices is more difficult to obtain than through competitive procurement procedures.

GAO reports to the Congress on defense contract pricing were instrumental in the adoption of Public Law 87-653, better known as the Truth in Negotiations Act of 1962. The GAO had found numerous instances of increased costs to the Government because contracting officials had not obtained accurate, complete, and current cost or pricing data while negotiating prices. Subsequently, in reviewing compliance with the act, GAO found that, although considerable progress had been made, deficiencies continued to exist.

Several changes were recently made by the Department of Defense in an effort to overcome these deficiencies. These changes require:

-- that written identification be obtained from contractors of cost or pricing data submitted in their proposals,

-- that postaward contract audits be requested by the contracting officer if he has reason to believe that cost or pricing data used in negotiations may not have been accurate, complete, or current or may not have been adequately verified, and

-- that a clause be included in all noncompetitive firm fixed-price contracts involving certified cost or pricing data, granting to Department of Defense representatives access to contractors' records of performance.

To obtain effective compliance with these regulations, it is necessary that there be effective cooperation between Government and industry and that the regulations be fair to both parties. GAO

plans to make further reviews later this year at contractors' plants and at various Government procurement offices to obtain firsthand knowledge of any problems that may be encountered.

Another area, in our opinion, where improvement in procurement can be made is in the use of formal estimating procedures by Government contractors. In a recent study by the Logistics Management Institute, 19 out of 23 large defense contractors indicated that their profits on firm fixed-price contracts--particularly those negotiated on a competitive basis--were not as satisfactory as their returns on other types of contracts. Reasons cited were inadequacies and over-optimism in their cost estimating which, in some cases, resulted in substantial losses.

The benefits to contractors of having accurate estimating systems are obvious. The Government is concerned not only because of the possible effect on the prices it pays but also because it has a major stake in the financial stability of its contractors.

IMPETUS FOR MODERN INFORMATION SYSTEMS

Business management in the United States today is looking increasingly to formalized systems to produce the information necessary to offer alternative choices as a basis for decision-making, to operate economically and efficiently, and to plan for the future. Business management, of course, always has had information systems of some type; but the systems more often than not were apt to produce reports both fragmented and untimely as measured by today's

standards. To a large extent, control was based on personal observations and intuition.

The development of modern information systems received its impetus from the capability of communications systems to transmit large volumes of data and from the ability of the modern computer to process that data.

Initially, the computer was considered primarily as a useful tool for performing clerical tasks of an accounting nature. Attributes of a modern management information system were added when these applications were extended to produce related information for decision-making and control. Countless sophisticated applications have been developed, giving management more timely and more accurate means for exercising control over day-to-day operations than ever existed before.

Better information to control expenditures for computers becomes increasingly important as improvements in computer and communications technology are put to use. The General Accounting Office is currently engaged in two Government-wide studies relating to the management and use of the Government's 4,000 computers.

One relates to the use of various concepts ranging from simple batch-type processing to real-time, multi-programmed, or time-shared systems which serve many users. We believe that as "third generation" and communications systems grow, the concept of sharing large data bases and programs should develop to a significant degree. Only

through the greatest coordination of effort on a Government-wide basis or, at least, on an interagency basis will we avoid extensive duplication of effort in designing and redesigning systems.

In the other study, we are looking toward ways and means of providing automatic interchange of data and programs between computer systems, concentrating on specific problems that have arisen because of a lack of standardization or compatibility.

USE OF "SYSTEMS ANALYSIS"

The computer, while being an important element of a modern management information system, is not an exclusive element. Neither are day-to-day operations the exclusive concern. "Systems analysis"--which may be conducted both with and without help from the computer--is another essential ingredient.

Systems analysis is intended to provide a basis for choosing between alternative courses of action. It is directed toward solving specific problems and requires deliberate attention to the nature of the problem and the objectives to be achieved. The process involves predictions of results and measurement of performance against plans. It uses "cost-benefit" or "cost-effectiveness" comparisons and frequently calls for the use of mathematical techniques such as model building, simulation, linear programming, and statistical inference. Where appropriate, it marshals the talents of all relevant disciplines, which may include engineers, scientists, mathematicians, psychologists, sociologists, economists, and accountants.

Experience gained in systems analysis has prompted some firms having an abundance of managerial skills to apply this knowhow to the development of management information systems for others and to the solution of a wide range of governmental problems. Several companies have made studies for the State of California on such matters as a statewide information system, waste disposal, mass transportation, criminal justice, and welfare operations.

ROLE OF BUSINESS IN SOLVING SOCIAL PROBLEMS

These examples point to a subject on which much discussion is taking place. That is the proper contribution of private enterprise toward solving the problems of society. More and more, as business magazines are currently reporting, private enterprise is leaning toward the conviction that it must assume wider responsibilities. John L. Harper, President of Alcoa, recently stated:

> "We are involved with government--and with every other component of our society--in the great task of meeting the problems that confront us. Our very existence in this society involves us. What is left is for us to realize that the job cannot be done without active participation by business. The alternative is likely to be a society without the prospects for growth and profit necessary for a healthy economy."

The Government is encouraging industry to become involved through its programs for job training, its Model Cities program and others, and its attack on air and water pollution. Many examples could be cited of the manner in which business has accepted the challenge to participate in the resolution of these and other problems. What is needed is acceptance of the challenge by all.

One of the greatest contributions that a good management information system can make is to provide business management with the time to direct more of its energies to the unsolved human and social problems prevalent today.

STAGGERING PROSPECTS FOR INFORMATION TECHNOLOGY

Prospects for the future growth of information technology stagger the imagination. Computer speeds are continuing to increase. Storage capacity has been enlarged. Processing costs are being reduced, although an organization's capital investment is likely to increase as the computer's increased capabilities are put to use. Time-sharing is on the rise. Moreover, simultaneous use of computers through remote, direct-access terminals is on the rise. Thus, computer facilities are becoming economically available to an ever-increasing number of users.

Improvements in communications technology will further extend their use. The new generation of satellites expected to be launched in the near future will make channels far cheaper. Also, the so-called communications pipeline, capable of carrying thousands of channels, will be able to carry millions of channels when the communications laser is finally developed. These developments could have a profound effect on the TV broadcasting industry; on newspapers, magazines, paperback publishers; and even on the Post Office Department, which could use the new channels as the medium by which mail will be transmitted in the future.

But our immediate concern is with the effect that these and related developments will have on management information systems.

-- Reduction in the cost of long-distance data transmission will make it economically feasible to enter data into the system at its point of origin, wherever this may be.

-- Improvement in optical character recognition will reduce high input costs, now a major deterrent to effective use of information systems as a management tool.

-- Lower transmission costs, more use of random-access files, and increased computer storage capacity will facilitate development of central information storage files from which data can be disseminated instantly to any point in the organization.

-- Data will be integrated; i.e., data obtained on a uniform basis from the same sources will be substituted for data obtained from various disparate files.

-- "Real time" systems, reflecting transactions as they occur, will become more prevalent.

-- Direct interrogation of the system will be possible.

-- Output will be printed, displayed, or oral.

-- Technical, legal, economic, and other information may be stored in the system, although a major obstacle to this development lies in the difficulty of classifying the data for recall.

In the words of H. I. Romnes, President of the American Telephone and Telegraph Company, "The 'information revolution,' if such it be, signifies not only our new-found capacities to generate, store and retrieve information but our growing ability to deliver it instantly where we please."

Management must be prepared to benefit from these developments. Progressive management will be prepared.

DEFICIENCIES IN PRESENT INFORMATION SYSTEMS

Much can be done to achieve more effective use of information technology in its present state. The two complaints most frequently heard are that reports are received too late to be of any real value and that the information is not tailored to the users' needs. These complaints indicate that management information systems are not presently meeting the prime reason for their existence--to provide timely, as well as accurate and reliable, information.

Sometimes this inadequacy stems from failure to ascertain specific information needs of the managers who make the decisions. Sometimes too much information is provided because of a tendency to include all the data that anyone might need.

It is difficult to generalize. We know that accountants have devised many techniques for producing pertinent information to aid in decision making and control. Consider, for example, the development of profitability accounting, responsibility accounting, direct costing, flexible budgets, cash flow statements, analyses of return on investment, exception reporting, and many other useful tools. Opportunities for improvement can still be found through constructively analyzing facts, with or without the use of third-generation computers or advanced communications technology.

Some companies have made progress in applying advanced information technology to various segments of their operations. For them, the challenge is to find the key to using the new techniques effectively across a much wider segment of their business.

PLANNING AN ACTION-ORIENTED SYSTEM

Planning a modern management information system is a formidable undertaking. Stakes are high and responsibilities are comparable. As the result of experiences--some pleasant, some unpleasant--a body of principles is beginning to emerge. Let me list some of the principles that appear to be most significant:

-- Management's needs must be ascertained.

-- A knowledge of the environment in which the business operates, as well as a knowledge of internal operations, is required to meet management's needs.

-- All levels of management must be served and reports must be tailor-made to suit the needs of each level.

-- Reports must be designed for measuring progress against planned performance.

-- Data must be provided to assist in examining the expected effects of alternative courses of action.

-- Reports of "exceptions" or "out-of-line" conditions should be used to the fullest extent appropriate.

-- Reports must be timely for effective action. Some may be required daily; others, weekly, monthly or quarterly.

-- The information system should be planned centrally to avoid fragmented, disparate systems that will ultimately have to be redesigned.

If these principles are followed, the term "action-oriented" can truly be applied.

Planning an information system must be a concerted effort, reflecting balanced consideration of the needs of the entire organization. The team approach is recommended. Dreamers, planners, and doers--those concerned with the future as well as those concerned with the present--must all be represented.

A management information system cannot be forced on people. Team participation will overcome ingrained resistance to change. Managers who perceive the opportunities become strong advocates for extending the new techniques to their own areas of operations.

THE ROLE OF THE ACCOUNTANT

Much thought has been given to the role the accountant can and will play in directing and operating management information systems. My belief is that management-oriented accountants are the logical choice to direct and operate such systems. They are the logical choice whether the responsibility is placed in the controller's organization or in another group.

But accountants must dedicate themselves to a program of continuous education. What the President said of those in public service is equally applicable to us here: "The public servant today moves along paths of adventure where he is helpless without the tools of advanced learning."

For the accountant, these tools include a knowledge of how the computer works; a knowledge of its potential; a knowledge of communications facilities and techniques; a knowledge of economics; and a knowledge of systems analysis and the theory of the related mathematical techniques. A knowledge of psychology and sociology also will help, particularly as the full potential of a modern management information system comes to be realized.

I strongly urge management accountants, controllers, and financial executives to take the lead in fostering the development of modern management information systems. The new techniques are here to stay. Their capabilities and potentialities cannot be ignored. Competitors, suppliers, customers, labor unions, and others will benefit from their use. Consequently, there is no choice. We must keep pace. We must learn to use these techniques as a powerful force for effective management and intelligent planning.

Government, as well as industry, must use these tools. While government does not measure results in terms of profit, it does have a measuring stick--effectiveness in accomplishing the purposes for which it exists. And, not unlike industry, cost of operations and effective use of resources are important factors.

The accountant, with his experience in traditional information systems, his aptitude for information analysis and interpretation, and the opportunity he has had to obtain a broad picture of his organization's operations, has many things in his favor. Unless he takes the initiative, however, and develops competence in the new tools that are emerging, he will lose his opportunity to direct a service that may become one of the most important in his organization. Otherwise his role will diminish in significance.

Those who have attempted to cope with the challenge posed by the advancements in information technology have shown a gratifying capacity to do so. The successful ones have been those who not only have recognized the necessity to keep abreast, but who also have been willing to pay the price. While hard work is required, hard work is to be expected in any position of responsibility. Your Association's "Continuing Education Program" recognizes the need to keep abreast, and presents the opportunity.