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Dysfunctional Consequences of Performance Measurements

THERE is today a strong tendency to state numerically as many as possible of the variables with which management must deal. The mounting interest in and application of tools such as operations research, linear programming, and statistical decision making, all of which require quantifiable variables, foster the idea that if progress toward goals can be measured, efforts and resources can be more rationally managed. This has led to the development of quantitative performance measurements for all levels within organizations, up to and including measurements of the performance of a division manager with profit responsibility in a decentralized company. Measurements at lower levels in the organization may be in terms of amount of work, quality of work, time required, and so on.

Quantitative measures of performance are tools, and are undoubtedly useful. But research indicates that indiscriminate use and undue confidence and reliance in them result from insufficient knowledge of the full effects and consequences. Judicious use of a tool requires awareness of possible side effects and reactions. Otherwise, indiscriminate use may result in side effects and reactions outweighing the benefits, as was the case when penicillin was first hailed as a wonder drug. The cure is sometimes worse than the disease.

It seems worth while to review the current scattered knowledge of the dysfunctional consequences resulting from the imposition of a system of performance measurements. For the purpose of analyzing the impact of performance measurements upon job performance, we can consider separately single, multiple, and composite criteria. Single criteria occur when only one quantity is measured and observed, such as total output or profit. Multiple criteria occur when several quantities are measured simultaneously, such as output, quality, cost, safety, waste,

and so forth. Composite criteria occur when the separate quantities are weighted in some fashion and then added or averaged.

SINGLE CRITERIA

A single criterion of performance was in use in a public employment agency studied by Peter M. Blau.¹ The agency's responsibility was "to serve workers seeking employment and employers seeking workers." Employment interviewers were appraised by the number of interviews they conducted. Thus the interviewer was motivated to complete as many interviews as he could, but not to spend adequate time in locating jobs for the clients. The organization's goal of placing clients in jobs was not given primary consideration because the measurement device applied to only one aspect of the activity.

Blau reports another case in a federal law enforcement agency which investigated business establishments. Here he found that work schedules were distorted by the imposition of a quota of eight cases per month for each investigator. Toward the end of the month an investigator who found himself short of the eight cases would pick easy, fast cases to finish that month and save the lengthier cases till the following month. Priority of the cases for investigation was based on length of the case rather than urgency, as standards of impartiality would require. This is one of many instances in which the existence of an "accounting period" adversely affects the over-all goal accomplishment of the organization.

Chris Argyris also reports this tendency to use easy jobs as fillers toward the end of a period in order to meet a quota.² In this case, a factory supervisor reported that they "feed the machines all the easy orders" toward the end of the month, rather than finish them in the sequence in which they were received. Such a practice may lead to undue delay of the delivery of some customers' orders, perhaps the most profitable orders.

David Granick's study of Soviet management reveals how the attention and glory that accrues to a plant manager when he can set a new monthly production record in one month leads to the neglect of repairs and maintenance, so that in ensuing months there will be a distinct drop in production.³ Similarly, the output of an entire plant may be allowed to fall off in order to create conditions under which

¹Peter M. Blau, *The Dynamics of Bureaucracy* (Chicago, Ill., 1955).

²Chris Argyris, *The Impact of Budgets on People* (New York, 1952).

³David Granick, *Management of the Industrial Firm in the U.S.S.R.* (New York, 1954).

one worker can make a production record, when the importance of such a record is considered greater than over-all plant production.

Joseph S. Berliner's report on Soviet business administration points out sharply how the accounting period has an adverse effect upon management decisions.⁴ The use of monthly production quotas causes "storming" at the end of the month to reach the quota. Repairs and maintenance are postponed until the following month, so that production lags in the early part of the month, and storming must again be resorted to in the following month. This has impact upon the rate of production for suppliers and customers who are forced into a fluctuating rate of operations with its attendant losses and wastes.

Standard costs as a criterion of performance is a frequent source of dissatisfaction in manufacturing plants.⁵ The "lumpiness" of indirect charges that are allocated to the plants or divisions (indirect charges being unequal from month to month), variations in quality and cost of raw materials, or other factors beyond the control of the operating manager, coupled with inaccuracies and errors in the apportionment of indirect charges, causes distrust of the standards. A typical reaction of operating executives in such cases seems to be to seek explanations and justifications. Consequently, considerable time and energy is expended in discussion and debate about the correctness of charges. Only "wooden money" savings accrue when charges are shifted to other accounts and there is no increase in company profits. It should be pointed out, however, that having charges applied to the proper departments may have the advantage of more correctly directing attention to problem areas.

Granick discusses two measures of the success of the Soviet firm which have been considered and rejected as over-all measures by Soviet industrial leaders and economists.⁶ The first, cost-reduction per unit of product, is considered inadequate because it does not provide a basis for evaluating new products. Further, variations in amount of production affect the cost-reduction index because of the finer division of overhead costs, quality changes, and assortment. The second over-all measure of a firm's performance, profitability, has been rejected as the basic criterion on the grounds that it is affected in the short run by factors outside the control of management, such as shortages of supplies.

⁴Joseph S. Berliner, A Problem in Soviet Business Management, *Administrative Science Quarterly*, 1 (1956), 86-101.

⁵H. A. Simon, H. Guetzkow, G. Kozmetsky, G. Tyndall, *Centralization vs. Decentralization in Organizing the Controller's Department* (New York, 1954).

⁶Granick, *op. cit.*

Profitability as a measure of success led to a reduction in experimental work and de-emphasized the importance of production quantity, quality, and assortment. Neither cost-reduction nor profitability was acceptable alone; each was only a partial index. The Soviets had concluded by 1940 that no single measure of success of a firm is adequate in itself and that there is no substitute for genuine analysis of all the elements entering into a firm's work.

Difficulties with single criteria have been observed in operations research, where one of the principal sources of difficulty is considered to be the choice of proper criteria for performance measurement.⁷ The difficulty of translating the several alternatives into their full effect upon the organization's goal forces the operations researcher to settle for a criterion more manageable than profit maximization, but less appropriate. The efficiency of a subgroup of the organization may be improved in terms of some plausible test, yet the organization's efficiency in terms of its major goal may be decreased.

In all the studies mentioned above, the inadequacy of a single measure of performance is evident. Whether this is a measure of an employee at the working level, or a measure of management, attention is directed away from the over-all goal. The existence of a measure of performance motivates individuals to effort, but the effort may be wasted, as in seeking "wooden money" savings, or may be detrimental to the organization's goal, as in rushing through interviews, delaying repairs, and rejecting profitable opportunities.

MULTIPLE MEASUREMENTS

Recognition of the inadequacies of a single measure of success or performance leads organizations to develop several criteria. It is felt then that all aspects of the job will receive adequate attention and emphasis so that efforts of individuals will not be distorted.

A realization in the employment office studied by Blau that job referrals and placements were also important led eventually to their inclusion in measuring the performance of the interviewers.⁸ Merely counting the number of referrals and placements had led to wholesale indiscriminate referrals, which did not accomplish the employment agency's screening function. Therefore, to stress the qualitative aspects of the interviewer's job, several ratios (of referrals to interviews, place-

⁷Charles Hitch and Roland McKean, "Suboptimization in Operations Problems" in J. F. McCloskey and Flora F. Trefethen, eds., *Operations Research for Management* (Baltimore, Md., 1954).

⁸Blau, *op. cit.*

ments to interviews, and placements to referrals) were devised. Altogether there were eight quantities that were counted or calculated for each interviewer. This increase in quantity and complexity of performance measurements was felt necessary to give emphasis to all aspects of the interviewer's job.

Granick relates that no single criterion was universally adopted in appraising Soviet management.⁹ Some managers were acclaimed for satisfying production quotas while violating labor laws. Others were removed from office for violating quality and assortment plans while fulfilling production quotas. Apparently there is a ranking of importance of these multiple criteria. In a typical interfirm competition the judges were provided with a long list of indexes. These included production of finished goods in the planned assortment, an even flow of production as between different ten-day periods and as between months, planned mastery of new types of products, improvement in product quality and reduction in waste, economy of materials through improved design and changing of technological processes, fulfillment of labor productivity tasks and lowering of unit cost, keeping within the established wage fund, and increase in the number of worker suggestions for improvements in work methods and conditions and their adoption into operation. But no indication of how these indexes should be weighted was given. The pre-eminence of such indexes as quantity, quality, assortment of production, and remaining within the firm's allotment of materials and fuels brought some order into the otherwise chaotic picture. The presence of "campaigns" and "priorities" stressing one or more factors also has aided Soviet management in deciding which elements of its work are at the moment most important.

Without a single over-all composite measure of success, however, there is no way of determining whether the temporarily increased effort on the "campaign" criteria of the month represents new effort or merely effort shifted from other criteria. And the intangibility of some of these indexes makes it impossible to judge whether there has been decreased effort on other aspects. Hence even in a campaign period the relative emphases may become so unbalanced as to mitigate or defeat the purpose of the campaign.

The Soviet manager is working then under several measurements, and the relative influence or emphasis attached to any one measurement varies from firm to firm and from month to month. Profits and production are used, among other measurements, and these two may lead to contradictory managerial decisions. Granick hypothesizes that

⁹Granick, *op. cit.*

some managers have refused complicated orders that were difficult to produce because it would mean failure to produce the planned quantities. Acceptance of these orders would have been very profitable, but of the two criteria, production quantity took precedence.

Numerous American writers in the field of management have stressed the importance of multiple criteria in evaluating performance of management. Peter Drucker, for example, lists market standing, innovation, productivity, physical and financial resources, profitability, manager performance and development, worker performance and attitude, and public responsibility.¹⁰ This list includes many of the same items as the list used by Soviet management.

The consensus at a round-table discussion of business and professional men¹¹ was that although return on investment is important, additional criteria are essential for an adequate appraisal of operating departments. These other criteria are fairly well summed up in Drucker's list above.

Thus we see that the need for multiple criteria is recognized and that they are employed at different levels of the organization—lower levels as in the employment agency, higher levels as considered by Granick and Drucker. At all levels these multiple measurements or criteria are intended to focus attention on the many facets of a particular job.

The use of multiple criteria assumes that the individual will commit his or the organization's efforts, attention, and resources in greater measure to those activities which promise to contribute the greatest improvement to over-all performance. There must then exist a theoretical condition under which an additional unit of effort or resources would yield equally desirable results in over-all performance, whether applied to production, quality, research, safety, public relations, or any of the other suggested areas. This would be the condition of "balanced stress on objectives" to which Drucker refers.

Without a single over-all composite measure of performance, the individual is forced to rely upon his judgment as to whether increased effort on one criterion improves over-all performance, or whether there may be a reduction in performance on some other criterion which will outweigh the increase in the first. This is quite possible, for in any immediate situation many of these objectives may be contradictory to each other.

¹⁰Peter M. Drucker, *The Practice of Management* (New York, 1954).

¹¹William H. Newman and James P. Logan, *Management of Expanding Enterprises* (New York, 1955).

COMPOSITES

To adequately balance the stress on the contradictory objectives or criteria by which performance of a particular individual or organization is appraised, there must be an implied or explicit weighting of these criteria. When such a weighting system is available, it is an easy task to combine the measures of the various subgoals into a composite score for over-all performance.

Such a composite is used by the American Institute of Management in evaluating and ranking the managements of corporations, hospitals, and other organizations.¹² These ratings are accomplished by attaching a numerical grade to each of several criteria, such as economic function, corporate structure, production efficiency, and the like. Each criterion has an optimum rating, and the score on each for any particular organization is added to obtain a total score. Although there may be disagreement on the validity of the weighting system employed, the rating given on any particular category, the categories themselves, or the methods of estimating scores in the A.I.M. management audit, this system is an example of the type of over-all performance measurement which might be developed. Were such a system of ratings employed by an organization and found acceptable by management, it presumably would serve as a guide to obtaining a balanced stress on objectives.

A composite measure of performance was employed in Air Force wings as reported by K. C. Wagner.¹³ A complex rating scheme covering a wide range of activities was used. When the organizations were put under pressure to raise their composite score without proportionate increases in the organization's means of achieving them, there were observable unanticipated consequences in the squadrons. Under a system of multiple criteria, pressure to increase performance on one criterion might be relieved by a slackening of effort toward other criteria. But with a composite criterion this does not seem as likely to occur. In Wagner's report individuals were subjected to tension, role and value conflicts, and reduced morale; air crews suffered from intercrew antagonism, apathy, and reduced morale; organization and power structures underwent changes; communications distortions and blockages occurred; integration decreased; culture patterns changed; and norms were violated. Some of these consequences may be desirable,

¹²*Manual of Excellent Managements* (New York, 1955).

¹³Kenneth C. Wagner, *Latent Functions of an Executive Control: A Sociological Analysis of a Social System under Stress*, *Research Previews*, vol. 2 (Chapel Hill: Institute for Research in Social Science, March 1954), mimeo.

some undesirable. The net result, however, might easily be less effective over-all performance.

These consequences were observable in a situation where goals were increased without a corresponding increase in means, which seems to be a common situation. Berliner refers to the "ratchet principle" wherein an increase in performance becomes the new standard, and the standard is thus continually raised. Recognition of the operation of the "ratchet principle" by workers was documented by F. J. Roethlisberger and William J. Dickson.¹⁴ There was a tacit agreement among the workers not to exceed the quota, for fear that the job would then be rerated. Deliberate restriction of output is not an uncommon occurrence.

Although the experiences reported with the use of composite measures of performance are rather skimpy, there is still a clear indication that their use may have adverse consequences for the over-all performance of the organization.

CONCLUSION

Quantitative performance measurements—whether single, multiple, or composite—are seen to have undesirable consequences for over-all organizational performance. The complexity of large organizations requires better knowledge of organizational behavior for managers to make best use of the personnel available to them. Even where performance measures are instituted purely for purposes of information, they are probably interpreted as definitions of the important aspects of that job or activity and hence have important implications for the motivation of behavior. The motivational and behavioral consequences of performance measurements are inadequately understood. Further research in this area is necessary for a better understanding of how behavior may be oriented toward optimum accomplishment of the organization's goals.

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¹⁴F. J. Roethlisberger and William J. Dickson, *Management and the Worker* (Cambridge, Mass., 1939).