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New Trends in Managerial Accounting

Virginia R. Huntington

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Dr. Virginia R. Huntington, CPA

The stewardship function of management is the basis for the development of accounting concepts which support the structure of financial accounting. Periodically tracing the source and application of legal dollars committed to an enterprise is the purpose of the financial statements prepared for shareholders and others interested in the financial history of the business concern. These reports also serve as reports on the effectiveness of management in a very broad sense. But for its own guidance, management needs additional information which is pertinent to the problems of profit optimization at the time the problems occur.

The public accountant is in a particularly favorable position to assist his clients with the many problems encountered in management's continuous effort to achieve optimum operating results. With his intimate knowledge of a business gained through his services as auditor and tax consultant, the public accountant can project his abilities in the management services area quite effectively in his efforts to help in the solution of management problems. The major concern of management and also of the public accountant is to be alert to the changing nature of management problems. They are not static. They change with social and economic advancements and with the advancement of technology.

A constant source of wonder is the amazing observation that technological advancements seem to enhance the art of problem solving in a manner most appropriate to the needs created by the changing nature of the problems to be solved. This state of affairs is not necessarily a happenstance, for there is a constant interaction of ideas between the theorists and the engineers of change in many fields of scientific and economic endeavor. It does mean that the manager and the accountant, directly concerned with everyday encounters with changing problems, must be alert to the advantages of any new problem-solving techniques which may be available and feasible under the circumstances. To service this need, accounting and other business periodicals have carried an increasing number of articles concerning the usefulness of various quantitative problem-solving techniques. It is our purpose here to explore a few of these.

Budgetary control.

In any effort to achieve success, a goal must be defined and a feasible plan must be adopted for reaching the goal. Management's goal in a profit-oriented enterprise is profit enhancement; this goal at any particular time may be expressed in terms of dollars of profit to be earned in a designated time period. An operating plan, or budget, with related cash and capital budgets, is constructed to point the way to attaining the profit goal. Sometimes, in the cooperative departmental budget processes, a tentative profit goal is found to be unrealistic and in need of alteration. In any event, as it is finally adopted, the operating plan must be set forth in a form which permits a useful comparison of actual departmental performance with planned performance. The budget thus serves as a control device, as well as a profit plan. Responsibilities for any significant deviations from the plan must be identifiable in order that any necessary corrective action may be taken. This requirement leads to the development of a system of responsibility accounting. Controllable costs are budgeted and recorded by responsibility center and by responsibility group. Few costs are allocated in this type of budget analysis.

Any useful plan has a degree of built-in flexibility, and so it is with a good budget. Management cannot foresee exactly the future demand for its product, but an appropriate analysis of fixed and variable cost parameters provides the information needed to construct a flexible budget to accommodate various attainable levels of sales and production activity. Nevertheless, even under a flexible budget plan, the usual budget format comprises a set of single-value revenue and cost standards for any assumed level of activity. Too often, the tendency is to regard the budgeted amounts as exact standards to be met, whereas common sense should lead to the view that the budget standards ought to be regarded as indicators or norms of expected performance. Even without departure from some assumed level of activity, deviations from a budget plan should not be surprising when budgeted amounts are regarded as averages of a number of possible acceptable outcomes. Random deviations regularly occur; it is the occasional significant deviation which needs to be iden-

tified and analyzed for cause, as a basis for corrective action. With these thoughts in mind, it seems reasonable to assume that in many instances the usefulness of a budget plan could be enhanced through the construction of interval budget standards, rather than single-value standards. The interval standard would delimit the range of random deviation, thus allowing the ready identification of significant deviation. The statistical concepts of "precision" and "reliability" would be applied to define the range of random deviation in an objective manner.

Statistically speaking, "precision" is a specified range of acceptable or assumed random deviation from a mean average value, measured either in absolute units (pounds, dollars, etc.) or in standard deviation units (units of variability); "reliability" is the probability of drawing a valid conclusion from the observation of incomplete or sample data. These statistical concepts may be applied to budget construction to produce interval budget standards (precision ranges), associated with coefficients of reliability. Regarded from a management-by-exception point of view, the bounds of the budget intervals would mark the beginning of areas of significant deviation demanding management review. Deviations within the budget intervals would be assumed to be normal and therefore acceptable. This exception approach would conserve management review time for the investigation of the more serious deviations from the budget plan. Presumably no particular cause would be found for deviations within budget intervals so any investigation of such items usually would prove relatively fruitless. Statistically speaking, if the distribution of possible values for a particular revenue or cost classification followed a normal curve pattern, then predictions of a representative norm for budget purposes would be within two standard deviations of the true norm about 95% of the time. Therefore, we could set an interval standard for that budget classification of an expected amount plus or minus two standard deviations and we could specify this degree of precision with a reliability of 95%.

Inventory control.

Whenever inventories are an important income-producing factor, the cost of ordering and handling inventory quantities is apt to be a significant item in the total cost structure. Inventories must be kept in balance so that customers' needs may be satisfied, but excess inventories bring excessive storage or carrying costs. Of related importance is the problem of determining the optimum order size which will minimize the sum of ordering and carrying costs during a time period. A useful formula has been devised to serve as a guide in solving this problem. If r = the number of units required during a time period; c_1 = ordering cost per order; c_2 = carrying cost per unit for the time period; and x = order size; then the problem is to find a value for x related to the minimum value of $f(x) = c_1 r/x + c_2 x/2$. In this expression r/x represents the number of orders and $x/2$ represents an average inventory layer, i.e. the average unit ordered is regarded as being carried one-half of the time period. A general formula for the value of x related to a minimum value of $f(x)$ has been derived for us with operations from the differential calculus. It is of the form: $x = \sqrt{2\, c_1 r/c_2}$. Of course, only a positive value for x has any real meaning in the solution of the problem of optimum order size.

Other aspects of inventory control involve the process of taking physical inventory as often as it is desirable or necessary to verify quantities. In some instances an estimate of quantities will be acceptable in lieu of a complete count. This situation would be most apt to prevail in the case of high-volume, low-value items. If the items are stored in some fairly uniform manner, then the count of a random sample of a fair size may be used as a basis for estimating the count of the entire inventory of that class of item. Or if the quantity of the particular item being estimated bears a uniform relationship to some other item in the inventory, a sample ratio may be applied to the complete count of the second item to estimate the inventory quantity of the first item. Admittedly, such estimates contain a statistical error, but the range of the error may be specified with a related coefficient of reliability.

Break-even analysis.

In any profit and cost-planning process, it becomes important to know where the break-even point is located along the procession of possible levels of production and sales activity. Operation below this point for any prolonged period would be disastrous and if lower levels of activity are anticipated, it is well to study the cost structure with a view to making some adjustments to lower the break-even point. Of course, any adjustments in depreciation of past acquisition costs would have no real effect and such a study should

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concentrate on the reduction of variable cost per unit and on the reduction of total fixed costs other than depreciation. A study of cost behavior necessitates the appropriate identification of fixed and variable costs and the separation of mixed costs into fixed and variable components. Regression analysis is a useful technique for this purpose. A simple scatter diagram of observed values for a certain class of cost plotted against activity levels gives a general impression of the type of cost-volume relationship involved. With enough observed values (e.g., 24 monthly cost totals plotted against production or sales quantities, whichever is appropriate) it should be evident whether the relationship is approximately linear. If so, the method of least squares may be used to specify the parameters of the regression line which best represents the available data from a statistical standpoint. Once obtained, these parameters may be used to predict the expected cost (with specified precision and reliability) for this budget classification at any assumed level of activity within the range of the observed values. Regression analysis may be carried out by hand calculation or by computer program. With frequent analyses, the latter method is desirable.

The break-even analysis is carried out after the regression analysis of each class of cost has enabled the analyst to separate fixed and variable components. If less accuracy is required, a regression analysis computation may be applied to all costs in total rather than to separate cost classifications. At any rate, a total cost line is developed for plotting on the break-even chart. Its y intercept is equal to total fixed costs and its slope is the incremental cost (variable cost) per unit of increase in volume. On the same chart a sales line is drawn, beginning at zero. The point of intersection of the total cost line and the sales line is the approximate break-even point. The analysis has its limitations, to be sure, because it assumes a constant product mix at all volumes of activity. With changes in sales mix, a new chart must be constructed since the relationship of revenues and costs will change with the introduction of greater quantities of high or low-profit products. Probably the most important aspect of break-even analysis is the increased insight obtained into the various aspects of cost behavior.

Conclusions.

We have discussed but a few of the more widely used quantitative techniques available for the analysis of operating data. Periodic profit planning is an important management activity in almost any business enterprise, but important decisions are involved also in project evaluation, e.g. in the consideration of proposed capital equipment acquisitions or special sales promotions. Meaningful information is essential to the development of effective management decisions of any nature. Always, the information presented to management must be in a form pertinent to the problems of management.

The public accountant today faces a great challenge to provide the best in management services. This challenge will be met if the public accountant makes every effort to study and adopt those new quantitative techniques which are appropriate to the needs of a particular management situation and if management and the public accountant join in a cooperative effort to pool the best of their talents and ingenuity to create their own innovations in developing optimum solutions for their management problems.

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Many unexpected and tremendously rewarding experiences came my way as your national president. It has become increasingly apparent that women are more frequently being accepted in the profession. That this is true is due in part, perhaps, to the emphasis placed on acceptance of women in governmental positions, but it is also due in large part to the continuous efforts of our predecessors. We acknowledge our indebtedness to these outstanding women and pledge to pay that debt by preparing an even more receptive atmosphere for those eager, intelligent, and enthusiastic young ladies who are now appearing in our midst.

1966 EVENTS

AWSCPA-ASWA Joint Annual Meeting,
Boston, Massachusetts
September 28 - October 1

American Institute of CPAs Annual Meeting,
Boston, Massachusetts
October 2 - 5