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Relation of budgetary control to cost accounting

James Oscar McKinsey

NATIONAL ASSOCIATION
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130 WEST 42nd STREET, NEW YORK

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JANUARY 15, 1922

RELATION OF BUDGETARY CONTROL TO COST ACCOUNTING

PUBLICATIONS DEPARTMENT NOTE

The subject of budgets is arousing widespread interest throughout the country at the present time. Many industrial organizations are taking up the matter seriously. In budget work great care should be exercised to see that the budgetary program is a well co-ordinated one. Such a budget involves the preparation of sales, production, plant equipment, purchase, and financial budgets, respectively. In the technique of budget making and the managerial uses of budgets the cost accountant plays a vital part because the person who prepares the budget depends to a great extent upon the cost accountant to supply him with the information he needs.

The Research Department of the Association is making a study of the subject of budgets and is attempting to collect the available materials on different phases of the subject. The department would like to enlist the co-operation of the members of the Association who have budget information at their disposal, such as, budget literature, procedures in budget making, and managerial uses of budgets. If you will send any material of this sort, which may come to your attention, to National Headquarters it will be much appreciated.

The Publications Department would welcome also any comments on any of the points brought out in the following article:

Requirements for Successful Manufacturing

It is self-evident that the primary purpose of the operations of a manufacturing firm, like that of all business firms, is to secure a profit for the proprietors. There are of course certain benefits derived by others from its operations, but those who are responsible for its management do not operate for the purpose of conferring these benefits. Consequently industrial management is judged in terms of profit and loss. There are many factors which affect the profit of an industrial firm, and there are many requirements which must be met to secure such a profit. From the viewpoint of its manufacturing operations, however, there are three predominant requisites if the largest possible profit is to be made: 1, The right article or articles must be produced; 2, the right article or articles must be produced in the right quantities and at the right time, and 3, the right article or articles must be produced as cheaply as possible. Any method of control or system of procedure if it is to be of service in industrial management must facilitate the meeting of these requisites.

Producing the Right Article

If a manufacturer produces but one article, there is little question as to what he should produce. There may come a time when he may have to decide whether it is wise to continue to operate at all, but so long as his operations continue *what* he is to produce is not a problem for consideration. If a manufacturer produces two or more articles, he is constantly confronted with the

problem of deciding the desirability of continuing the manufacture of each of the articles which he produces and of determining the relative emphasis which he will place on the production of the different articles. If several hundred articles are produced, this becomes a problem of magnitude and of major importance. It is said that he is confronted with this problem constantly, for, although he may determine that the production of an article is desirable at the time of its original production, there is no assurance that its production will continue to be desirable for any definite period of time. Market conditions and production costs are constantly changing, and an article which may be produced and sold at a profit one year may result in a loss in a subsequent year. Also the production and sale of other articles may become more profitable so that it is desirable to shift the emphasis from one to another.

To determine the desirability of producing an article, it is necessary to determine 1, whether the article can be sold, and 2, whether it can be produced at a cost which will make it possible to sell it at a profit. Obviously the quantity which can be sold will affect the cost of its production. Whether it can be sold and in what quantities must be determined by the sales department. Assuming that it is an article which is now being produced, this information will be shown on the sales estimate. Under the same conditions, the cost at which the article can be produced will be determined from the cost records. But in determining whether it can be produced profitably, it will not be satisfactory to follow blindly the cost records. These records show what the quantity produced during past periods cost. The sales program as shown by the sales estimate may call for a larger or smaller quantity during the next period and the change in quantity may affect the unit cost. Moreover, in considering the production cost of the specific article, its production must be considered in connection with the production program as a whole. The sales program may call for such an increased production of other articles which are more desirable that to produce this article it will be necessary to secure new equipment or enlarged production space. To secure these may result in an increase of cost which makes the production of the article prohibitive. Consequently in using the cost figures of previous periods to judge the costs of the following period, it is necessary to consider them in connection with the production program of this period as shown by the production estimate. It can be seen, therefore, that in determining what to produce, there is a very close relation between the budgetary program, as shown in the sales and production estimates, and the cost statistics provided by the cost records.

Producing the Right Quantity

After the articles to be manufactured are selected, it is then necessary to determine the quantity in which they are to be produced. The sales estimate states the sales desired and deemed

possible by the sales department. After this estimate is prepared, it is necessary that it be reviewed by the production department to see if the requirements of the sales program which it states will result in a well-balanced production program. This necessitates that the production department have a record of the machine capacity of all the equipment of the company. In other words, it must make an estimate of the operations which the machines can perform which results in a "budget" of machine capacity. It is necessary for the production department to take each item on the sales estimate and determine the machine operations necessary to produce it, and then determine if the total operations required by all the items on the estimate are greater than the machine capacity of the plant as shown by the budget of machine capacity. If so, the sales estimate must be revised unless it is planned to increase the plant and equipment.

The sales estimate, when approved, states the number of units of each article which will be required by the sales department during the next budget period. To translate these requirements into an estimate of production for the period, it is necessary to take into consideration the inventory of finished goods at the beginning of the period and the estimated inventory at its end. To illustrate: the sales units of the X Manufacturing Company estimate their requirements for Article Y for the next budget period to be 240. The inventory records show that the inventory at the beginning of the period is 60, and it is estimated that an inventory of 40 at the end of the period will be sufficient. The estimate of production for the period will be $240+40-60=220$. Each item on the sales estimate must be considered in the same manner to estimate accurately the production for the period.

But the problem of the production department is not merely to produce the goods to be sold during the budget period but production must be so distributed throughout the year that the most efficient use may be made of the plant, equipment, and labor force. Under any system of control, there will be varying production requirements at different seasons of the year, but two important considerations are: 1, that sufficient stock shall be on hand to fill sales orders; and 2, that this stock be constantly replenished from the factory. It is an economic loss to maintain stocks of finished goods on hand for any longer period than is absolutely necessary to make prompt shipment reasonably sure.

To schedule production so that sufficient goods will be on hand at all times to meet sales demands and yet avoid an excess of capital invested in inventory, it is necessary to set up a schedule for the inventory of finished goods. The ideal schedule would be one which delivered to stock each day the exact amount of goods sold during the day. Such a balance is obviously unattainable, and consequently it is necessary to carry an inventory. One of the most important problems of production control is to determine the mini-

mum amount for this inventory and to plan production so as to maintain the minimum.

The proper control of inventory requires 1, the establishment of maximum and minimum limits to serve as a check on its size, 2, the keeping of adequate records, and 3, the enforcement of an adequate procedure to maintain these limits. As all cost accountants understand, the "maximum" is the amount above which the inventory should never be permitted to go. The "minimum" is the amount below which the inventory should not go without the placing of a production order for the "quantity to order."

The production department should establish minima, quantities to order, and maxima in accordance with the following principles:

1. There should be at all times sufficient stock on hand to satisfy customers' demands, if such demands are consistent with the capacity of the factory.
2. There should not be larger stocks on hand than can be turned over in a period necessary for the production of a similar quantity, unless such quantities do not constitute an economical run.
3. Goods should be produced in quantities large enough to insure economical production.

The following factors should be considered in establishing minima, quantities to order, and maxima: production period, probable sales, margin of safety, and economic run.

The production period is the time required from the placing of an order until the finished goods are delivered to the storehouse. The length of the production period cannot be established with absolute exactness. It will vary with the quantity produced. Obviously, it will take longer to produce ten thousand units of an article than to produce one thousand. In this connection the cost records can render valuable service, if they have been kept in such a manner that they show the production period for different quantities. If an accounting record is kept with each production order, it should not be difficult to obtain this data.

The probable sales for the budget period are stated in the sales estimate. By using the ratio of the production period to the budget period, the probable sales for the production period can be obtained. To illustrate; if the production period is thirty days and the quarterly sales estimate for item Y is 900 units, the probable sales for the production period are 300. In the determination of the probable sales for the production period, the sales estimate renders a very useful service. The amount of these sales must be known if proper inventory control is to be exercised. Without this information, it is impossible to establish an accurate minimum or quantity to order. In the past, accountants and industrial en-

gineers, working without the assistance of a sales estimate, have been compelled to use past sales as a basis for computing the probable sales. There are at least three reasons why this procedure is unsatisfactory:

1. The constant changes in market conditions may make the sales of future periods more or less than during past periods.
2. A business is apt to make changes in its marketing plans and general business policies which will affect the sale of some or all articles which it may produce.
3. The sales of past periods may have been less than they might have been if there had been an adequate inventory to meet sales demands. Future production should be based on future sales and not on past sales.

The sales estimate, if properly prepared, makes possible accurate and scientific inventory planning.

Neither probable sales nor the length of the production period can be forecast without error. Consequently if the minima are established at the amount of probable sales for the production period, and a production order is issued when the minima are reached, it will be only in rare cases that stocks on hand will be exactly depleted when the newly manufactured product arrives at the storehouse. Probable sales may be oversold, or strikes, breakdowns, and delays in deliveries of raw material may interfere with the normal course of production. It becomes necessary, therefore, to have a quantity of finished goods on hand in excess of the probable sales for the production period at the time the production order is issued. The excess may be termed the margin of safety. This margin is usually estimated at from ten to twenty-five per cent of the probable sales for the production period. Its amount will vary in different businesses and may well vary with reference to different items in the same business. The accounting records should show the variations which have taken place in the past with reference to production and sales. With this information as a basis it should be possible to make a satisfactory estimate of the margin of safety.

In determining the "economical run" it is necessary to determine the time required for "tearing down" and "setting up" the machines used. It is necessary to produce a sufficient quantity on each production order to prevent the overhead charge resulting from the shifting of the machines from causing an excessive unit cost. This problem usually arises in connection with slow moving items, since in this case the probable sales for the production period are so small that they do not constitute an economical run. In determining the quantity to order of slow moving items, it is necessary to offset the high unit cost resulting from a small order against the capital cost of carrying a larger inventory if they

are produced in larger quantities. In determining the economical run, the cost records are again brought into play and from these the cost of producing different quantities can be obtained, or on the basis of these records estimates can be made of such costs.

The probable sales for the production period are the quantity expected to be turned over during the period. The margin of safety is the amount which it is thought necessary to carry in addition to insure against contingencies. Therefore the quantity to which stock can be depleted before a production order is started is the sum of the probable sales for the production period and the margin of safety. This is the minimum. Whenever stocks are depleted to this quantity, a production order is started. The product which is specified on the production order passes through the production process and arrives at the storeroom, ideally, when stocks have been reduced to the margin of safety.

The quantity to order may have to be established under two sets of conditions:

1. When the probable sales for the production period are less than the amount of the economical run, the latter amount becomes the quantity to order.
2. When the amount of the probable sales for the production period is equal to or greater than the amount of the economical run, the former amount becomes the quantity to order.

The plan of inventory control outlined in the preceding discussion is based on the assumption that goods are being produced in anticipation of orders, rather than on special orders. In the latter case, inventory control cannot be exercised in the same manner, but it is just as essential that production be planned in advance so that preparations can be made to produce the necessary amount.

Producing as Cheaply as Possible

To secure economical production it is necessary to obtain the efficient use of materials, equipment, and labor. The efficient use of these requires 1, that the proper amount of each be on hand at all times and that an excess be avoided; 2, that proper records and reports be maintained to detect inefficiency and to provide data which will make possible its elimination. It is also necessary that there be proper supervision and direction of these factors of production, but the method by which this is done is beyond the province of this discussion.

To secure the proper amount of equipment, materials, and labor at all times it is necessary to plan production in advance so that provision for their procurement can be made. In other words it is necessary to prepare estimates of equipment, material, and labor requirements and to have these estimates based on the esti-

mates of finished goods. After these estimates are prepared, it is possible to schedule deliveries of equipment and materials and the purchase of labor so that the quantity desired can be obtained when needed. In preparing these estimates and making the schedules of purchase and delivery under them, the needs of the past as shown in the accounting records should be considered. If this planning is done carefully and accurately, excess purchases on the one hand and costly delays, because of late deliveries on the other, will be avoided.

The most carefully made plans are apt to go awry if a check on their performance is not exercised. To exercise such a check over manufacturing operations is the function of cost accounting records and reports. But accounting reports are of little value except as they afford a basis of comparison. To know that a certain quantity of goods is produced at a certain price during a certain period of time means very little when considered by itself. The important question is how does the quantity produced and its cost compare with what should have been produced and the price which it should have cost. For a long time accountants have made use of comparative reports which compare the quantity of production and cost of the current period with the quantity and cost of the previous period. Much value has been obtained from these comparisons, but one apparent difficulty in their use is due to the fact that the results of each period fluctuate so that it is difficult to know which period represents the proper results. To eliminate this difficulty many accountants and engineers during recent years have advocated the establishment of predetermined or standard costs which show what normal costs should be and provide the means of comparing the results of each period with the predetermined or standard costs. It is true that accountants have usually limited their standard costs to cost of manufacturing expense, but there seems to be no good reason why in most businesses standard costs for material and labor may not be established. It may be admitted that accountants are not in agreement with reference to the advisability of doing this.[1]

In establishing standard or predetermined costs, it is necessary to consider the quantity to be produced for the costs vary with the quantity produced. The practice of accountants has been to select one or more periods during which they think there was normal production and use the costs of these periods as standard costs, or at least to regard the production of these periods as standard production and determine the standard costs on the basis of this quantity of production. For the purpose of distributing the costs of production evenly over all periods and thereby determining a uniform cost, there is a decided merit in this method. It would seem, however, from the viewpoint of administrative control, it would be much more accurate to have the standard costs based on

[1]See 1920 Year Book, National Association of Cost Accountants, pp. 45-58.

the anticipated production of the period under consideration. The manufacturer does not care so much to know how his costs compare with what they should be if he produced the quantity which he produced during some previous period, as he desires to know: 1, at the beginning of the period what his costs will be if he manufactures what he plans to manufacture during the period; 2, during the period how his costs compare with what he estimated they would be; and 3, why there is a variation between the estimated and the actual. It is not intended to imply that the use of standard costs as a means of equalizing costs may not be desirable, but only to emphasize that standard costs based on past production do not give the manufacturer the information which he most needs to judge the desirability of contemplated plans or of controlling these plans after they are put into operation. Industrial management necessitates the planning of future operations, and such planning must be based on information with reference to what those operations are expected to be. Such information is possible only when it is obtained from estimates which are scientifically and accurately made.

Financial Management

The manufacturer like all business men is constantly confronted with the problems of financial control. Funds are required to finance all his operations, and the demand for such funds is an imperative one. When funds are needed, their procurement cannot be long delayed. It is exceedingly important therefore that he have some means of anticipating the demands for such funds. This can only be done accurately by the preparation of estimates showing the anticipated operations of all the departments of the business and a determination of the cash receipts and cash disbursements which will result from these operations. Based on the estimated cash receipts and the estimated cash disbursements a financial budget can be prepared and a financial program formulated.

The proper control of finances has a very close connection with costs and cost records in two ways: 1, inadequate funds lead to a lack of equipment, materials and supplies which results in inefficient use of materials and labor with the consequent increase in costs; and 2, proper use of funds requires data which shows the most economical methods of production and which serves as a basis for the preparation of financial plans. The cost records supply a material part of this data. Here again we see the relationship of budgetary control to cost accounting.

Procedure for Budgetary Control

Because of the close relationship between budgetary planning and cost procedure which has been emphasized in the preceding discussion it is thought appropriate to discuss briefly the procedure by which budgetary control is effected. The procedure to be followed by a business firm in the installation and operation of budget-

ary control will of necessity depend on the organization of the business and the nature of its operations. A possible procedure, stated briefly in outline form, is as follows:

1. Each department prepares an estimate of its "activities" for the budget period. How these activities are stated depends on the nature of the operations of the department. The sales department states the sales it expects to make and the estimated expenses it will incur in making these sales. The production department states the estimated production for the period and the estimated cost of this production. The "service" departments, such as the personnel department, the traffic department, the auditing department, and the office manager's department, state the estimated expenditures of their departments. Because of the interdependence of these departments, some will need to use the estimates of other departments in making their estimates. For instance, the production department must know the estimated sales before it can estimate the production necessary to meet the sales demands; the treasurer must know the plans of all the departments before he can estimate his cash receipts and cash disbursements. Consequently a procedure must be set up which provides for a proper scheduling of the estimates with reference to preparation and distribution.

2. The departmental heads will transmit the departmental estimates to an executive who has supervision of the bugetary program. Sometimes the Comptroller acts in this capacity, while, in many cases, this duty is delegated to a member of the staff of the General Manager or President. This official combines the estimates of all the departments into a proposed budget for the business. This proposed budget should show the estimated receipts from all sources and the estimated expenditures by all departments of the business.

3. The official in charge of the budget program makes a comparison between the estimated revenues and the estimated expenditures as shown by the proposed budget. If the estimated expenditures exceed the estimated revenues, one of the following courses of action must be taken:

a. The departmental expenditures may be reduced. In making such reductions a problem arises due to the fact that the reduction of expenditures may result in a reduction of revenues. For instance, if the expenditures of the advertising department are reduced, this may result in a reduction of sales. In the same manner, a reduction of the expenditures of the production department may result in a reduction of production with the consequent lack of sufficient goods to meet sales demands which will involve a reduction of revenue from sales. Care must be taken, therefore, in the reduction of expenditures to see that revenues are not reduced correspondingly.

b. Additional capital may be secured. If it is not deemed wise to reduce expenditures, plans must be made to secure additional capital with which to finance the excess of expenditures over revenues.

The officer in charge of the budgetary program may make recommendations with reference to possible procedure, but he is usually not invested with authority to determine the plans to be followed.

4. The proposed budget, as prepared by the officer in charge of the budgetary program, is submitted to an advisory committee, composed of the principal executives of the company and presided over by the President. This committee considers the proposed budget and makes such revisions as it thinks necessary. In case the proposed budget involves important changes in the company's policy, or involves significant plans of financing, it may be necessary to submit it to the Board of Directors for consideration. In some businesses all budgetary plans are submitted to the Board of Directors for approval. After the preliminary budget, as prepared by the executive in charge of the program has been approved, it constitutes the working program for the budget period. The budget, as adopted, sets limits upon the expenditures of all the departments. These limits cannot be exceeded without the permission of the Advisory Committee. The budget also sets up a standard of performance for certain departments. For instance, it states the sales that are to be made by the sales department and the goods which are to be produced by the production department.

5. Each department makes plans which will enable it to carry out its program as outlined under the budget. For instance, the advertising department makes contracts for advertising space; the sales department sets quotas for its salesmen; the production department, through its planning department, sets up schedules of production.

6. Proper records are established that the performance of each department may be properly recorded and comparisons made between the estimated and the actual performance. Periodic reports are made to the executive in charge of the budgetary program and are by him transmitted to the Advisory Committee, and in some cases to the Board of Directors. These reports show a comparison between the estimated and the actual performance of each department for the period. Based on these reports the Advisory Committee, or Board of Directors, may make such revisions of the budgetary program as it may deem desirable.

Results to be Accomplished through Budgetary Control

Budgetary control, if properly executed, accomplishes the following results:

1. Co-ordination of sales and production.[1]

a. By estimating sales possibilities and planning production to produce the goods necessary to meet these possibilities.

b. By limiting production to the amount necessary to meet probable sales demands as shown by the sales estimate and thus preventing an excess inventory of finished product.

2. The formulation of a profitable sales and production program.

a. By determining the lines of goods most desirable for a well-rounded sales program and adapting production, insofar as is consistent with the following paragraph, to produce the necessary quantity of these lines.

b. By determining the lines of goods most desirable for a well-rounded production program and planning sales, insofar as is consistent with the preceding paragraph, so as to sell the amount of these lines necessary to secure economical production.

3. Proper control of expenditures.

a. By requiring the preparation by each department head of an estimate of the expenditures of his department during the next budget period.

b. By requiring the submission of these estimates to the Advisory Committee for consideration and approval.

c. By the prohibition of any expenditures in excess of the departmental estimates without the permission of the Advisory Committee.

d. By requiring the submission of monthly reports showing a comparison between the actual expenditures for the month and the estimated.

4. Formulation of a financial program.

a. By the estimating of cash receipts based on the sales program and the estimate of collections.

b. By the estimating of cash disbursements based on the production, purchasing, plant and equipment, and departmental expense budgets.

c. By determining the excess of disbursements over receipts and the preparation of a financial program which will secure funds to provide for this excess.

5. Co-ordination of all the activities of the business.

a. By the preparation by each department of an estimate of its activities during the budget period.

[1]The points here brought out with reference to co-ordination of sales and production in a manufacturing business apply as well to co-ordination of sales and purchases in a mercantile business.

b. By the studying of these departmental estimates by the departmental executives and the Advisory Committee.

c. By the modification of the activities of each department to the end that they coördinate with the activities of each other department.

d. By the preparation of an estimated balance sheet and an estimated statement of profit and loss showing the anticipated results of the operations provided for by the budgetary program.

e. By the formulation of plans and policies which will make possible the attainment of the estimated results as shown by the financial reports prepared in the preceding paragraph.

Summary

It has been the purpose of the foregoing discussion to emphasize:

1. That the purpose of cost accounting is to serve as an aid in industrial management to the end that the manufacturer may receive as large a profit as possible from his operations.
2. That industrial management, like business management in general, must plan the future if it is to exercise proper control of the present.
3. That such plans are best made when based on formal estimates which state the anticipated operations of each department which in turn are revised so that they will coördinate with the plans of each other department, thus resulting in the formulation of a system of budgetary control for the business as a whole.
4. That cost accounting serves a useful purpose in providing data which is needed in the preparation of the periodic estimates and serves an equally useful purpose in providing data which can be used in "checking up" on the estimates made.
5. That the various estimates prepared as a part of the budgetary program provide data which is necessary for the efficient operation of the cost records and reports.

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