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# The Essential Elements of a Cost Accounting System

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NEARLY ALL BUSINESSES have some form of a cost accounting system. In order to define the elements of a cost accounting system it is first necessary to define "cost accounting system." A very rudimentary definition is—a *method of keeping track of costs*.

The type of system can range from a simple manually operated one to one that is highly complex, employing EDP. Whether it be simple or highly complex, the system, in order to be effective, has to meet the needs of management. Some management people make rather limited use of their cost accounting system and only require that costs be used in valuation of inventories and determination of income. Others, and these are becoming more numerous, use their cost accounting system as a control in their business operations.

The word *control* implies some form of plan against which a comparison is made. Although the plan is a very necessary part, the emphasis in this presentation is on the *control* aspect of the accounting system. Control evolves from the ability to relate deviations from the plan directly to the source and cause.

There are different basic kinds of cost accounting systems that may be used, depending on the particular operation. The two that are based on historical information are Job Order Cost and Process Cost. These are *after-the-fact* cost systems. The third system is Standard Cost, which is based on a predetermined cost. The standard should represent a cost that can be attained under normal operating conditions.

Standards can be developed for both Job Order Cost and Process Cost and incorporated in these systems. In some Job Order Cost systems, those where there are constantly changing operations, it may not be practical to develop standards, since by the time the standards are calculated the operation is finished. However, in many Job Order systems there are a large number of routine operations and in most Process Cost systems there are sufficient amounts of repetitive operations to warrant the establishment of standards.

For purposes of this presentation, the term *cost accounting system* will relate to manufacturing cost and not to distribution cost or administrative cost.

If we view the cost accounting system as a part of the total man-

agement information system, we can develop a deeper insight into the need for having the kind of cost system that meets the requirement to aid management in the operation of the business.

With the advent of scientific management techniques to control the use of direct labor, there came the need to incorporate these standards in some form of a reporting system. This labor reporting system could be used, and in many cases was used, independently of the cost reporting system. Labor efficiency was usually reported in terms of earned hours compared to actual hours. At the cost-center level this is still probably a very useful control, since many production foremen think in terms of standard production per hour. As one gets away from this level of operations, however, increased emphasis is placed on reporting in terms of dollars. It was only natural then that the labor standards should be priced and thereby converted to cost standards to be used for control in the reporting system. Use of the cost accounting system as a control device follows when the elements essential to an effective system are defined. (Schematic of Essential Elements, Figure 1)

### **COLLECTION SYSTEM**

The first element is a collection system for gathering the raw data from the source, the source being a cost center for production departments. For purposes of this presentation, the definition of cost center is broadened to include all activities within manufacturing cost that incur expenses.

With this broad definition in mind, one of the first steps in establishing the collection system is a proper determination of the cost centers. The number and type of cost centers necessary will depend on the flow of materials and operations and the degree of precision in costing desired by management. Responsibility for performance of the cost center should not be divided between supervisors. Only one man should be looked to for control of costs in each cost center. After the cost centers have been determined the costs specific to them can be calculated and a chart of accounts drawn up so that this information can be recorded in the ledger. The emphasis on the cost-center expenditures should be on controllable expenses.

The second step is the determination of the activity unit for the cost center. This may be stated in terms of standard labor hours, standard machine hours, standard production per hour, or a number of other ways. The activity unit chosen for costing should be the one most closely related to the incurrence of expense. Next, the cost-center

Schematic of Essential Elements of Cost Accounting System

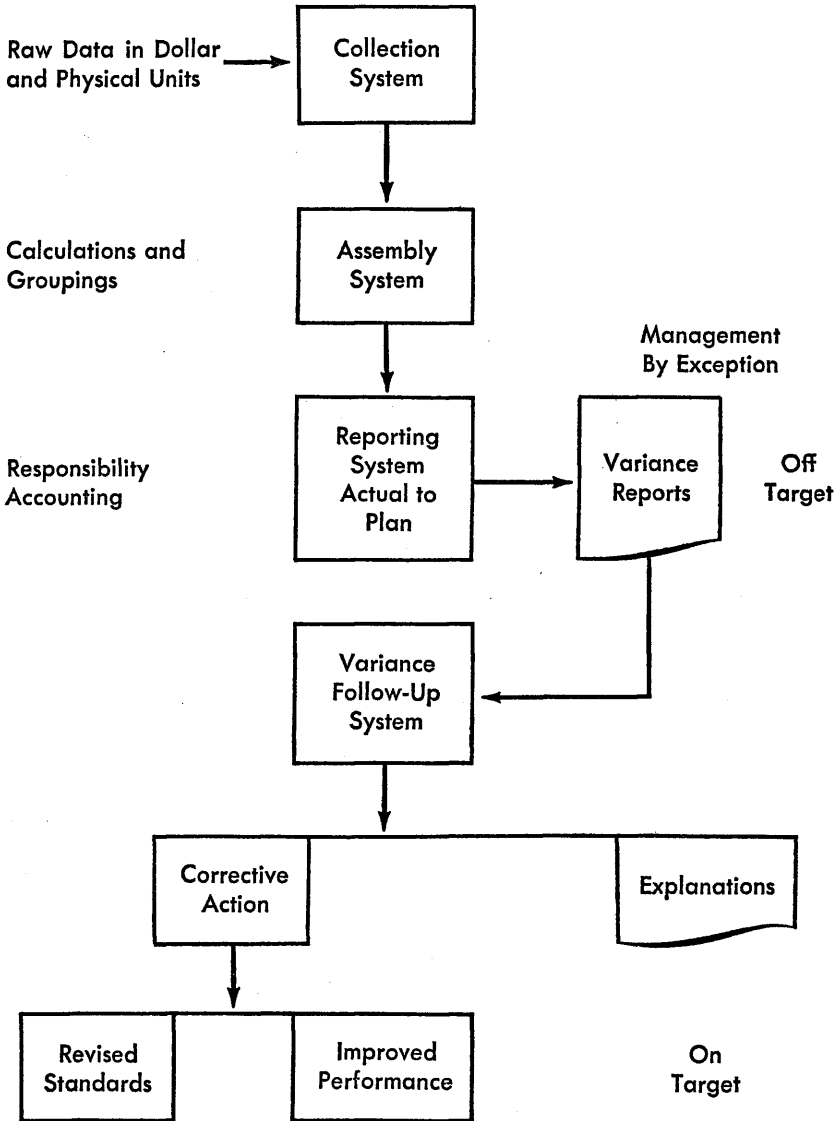


Figure 1

rates can be computed and from these and the material costs the product costs can be developed.

The final step in the collection system is the establishment of the paper-work routine to gather the desired information on activity and expense related to the respective cost centers and to transmit this information for further processing. A point sometimes taken for granted in a cost accounting system is that the source information will be correctly reported but errors do occur. Although the variance reports will show up some of these errors, there should be other controls built into the system. One might be a form of transfer slip when one department agrees to the quantity of material or semi-finished product transferred to it by another department. The production count on finished products should be checked against inventories and shipments. If the production employees are held accountable for bad reporting they will soon give accurate reports. One way to discredit a good system is to accept bad input information and then carry it through the reporting system only to find that the explanation for the variance is a faulty production count.

### **ASSEMBLY SYSTEM**

The second element in the cost accounting system is the assembly system for putting together the data sent in by the collection system. In most small companies this is done manually by the cost-accounting group. Knowing what the end requirements are in the form of reports, they can lay out their worksheets to convert the raw data into meaningful groupings. These groupings then become the basis of variance analysis by the cost accounting group.

Some cost accounting systems make an over-all comparison of actual costs to standard costs and come up with an over-all variance. This variance is very difficult to analyze in any kind of detail. It's impossible to associate the variance with a particular responsibility. It would be much more effective if the standard cost was separated into components—direct material, direct labor, and overhead. These standard factors could then be compared to actual costs grouped in the same manner.

The material variance resulting from this comparison can be further analyzed into material price and material usage variances; the responsibility for the material price variance is normally associated with the purchasing department, and the material usage variance is associated with plant responsibility.

The next variance—direct labor variance—can be stated in terms of differences due to rate and differences due to performance. These are sometimes combined and not explained individually. This is particularly true in the initial stages of implementation of a cost-control reporting system when it may be impractical to keep track of rate changes. These can usually be planned for with sufficient accuracy on an annual basis so that their effect can be taken into consideration during the budget planning period.

The last variance—overhead variance—can be analyzed into at least two parts if a flexible budget is in operation. These two parts are the volume variance and the spending variance. The volume variance is most likely associated with sales responsibility and the spending variance is related to plant responsibility. If a flexible budget is not used this separation cannot be made. The criterion that should be used in determining to what depth variance analysis should be carried is, *How useful is it to management from the standpoint of their ability to take action?*

The cost accounting group operates in a staff capacity and is responsible for pointing out the variance and identifying where it occurred and what element or cost (material, labor, or overhead) was in question. They are not responsible for the variance itself nor are they responsible for taking corrective action, although there are instances where a strong-minded cost accounting group has taken on this responsibility. The usual outcome is a widening rift between the production group and the accounting group.

This situation is unfortunate because a good working relationship between these two groups can be of great benefit to a company. To be a good cost accountant requires an intimate knowledge of the production process and a familiarity with the language of production. A good cost accountant makes a point of keeping himself up-to-date on new methods and processes as they are introduced. He can often tell when there is an error in the source information and get it corrected before it goes through the information processing system. If there is a good relationship between production and accounting, production will understand accounting's need for more information and will gladly furnish it. They may even suggest the need themselves. But if this relationship does not exist, the production people most likely will strongly resist furnishing additional information. The usual retort is, "We can not make any money doing book work."

**REPORTING SYSTEM**

The next essential element is a reporting system that shows how well the actual costs were kept under control. If the costs exceed the estimate, or the standard if a standard cost system is used, it is very helpful to know precisely where this situation occurred and what part of the cost (material, labor, or overhead) caused the variance. Knowing this, one can go to the person responsible for the cost center and find out why the variance occurred. It may be that the standard was not satisfactory or it may be that performance was not up to par.

It is also very helpful if, in setting up the cost center rates, those expenses that vary with the production activity (variable costs) are separated from those that vary with the passage of time (period costs)—an example of the first is direct labor and of the latter, depreciation. This is not done to establish a direct costing system, but as an attempt to eliminate the volume variance by excluding the period expenses when the cost-center rate for control purposes is developed. The following two reports (Figure 2) will serve to illustrate the concept.

As you look at the statement on top you notice that this year's unit costs are being compared to last year's unit costs. If you look at this year's volume figures you can see that the volume is significantly different than last year. What items on the statement are affected by this difference? As you can see, the only one whose unit cost has not changed is Machinery Repair: the rest have all changed from a minimum of 50% (Power-Electric) to a maximum of close to 300% (Quality Control).

Examination of some of these expenses brought out why some of these changes occurred. The first, Department Payroll, is the total of the direct labor, indirect labor, and salaried supervisors in the department. It is quite difficult to lump these three together and then try to control on a unit-cost basis. For control purposes, this account should be separated into a minimum of two parts: Department Payroll-Variable, and Department Payroll-Fixed. The next item, Power-Electric, is based on a distribution of the electric bill. Here again there does not seem to be much relation between the two years. If power costs are to be controlled at this level, it will require a more accurate method of determining power usage. This could be done by the installation of meters or through a special study by the engineers, if the use of meters is not practical. Machinery Repair, in this instance, happens to have a direct relation with activity. There were not any major repairs

| <b>OLD</b>               |                 |                                |             |
|--------------------------|-----------------|--------------------------------|-------------|
|                          |                 | <i>Volume—This year 84,138</i> |             |
|                          |                 | <i>—Last year 54,303</i>       |             |
|                          |                 | <i>Per Unit</i>                |             |
|                          | <i>Expenses</i> | <i>1965</i>                    | <i>1964</i> |
| Department Payroll ..... | \$2,254         | .027                           | .046        |
| Power-Electric .....     | 692             | .008                           | .012        |
| Machinery Repair .....   | 358             | .004                           | .004        |
| Depreciation .....       | 714             | .008                           | .013        |
| Overhead .....           | 2,627           | .031                           | .051        |
| Quality Control .....    | 336             | .005                           | .014        |
|                          | <u>\$6,981</u>  | <u>.083</u>                    | <u>.140</u> |

| <b>NEW</b>            |               |   |   |               |
|-----------------------|---------------|---|---|---------------|
| <i>Current Period</i> |               |   | <i>Year to Date</i>                         |               |
|                       |               | <i>Better<br/>(Worse)<br/>Than<br/>Plan</i> | <i>Better<br/>(Worse)<br/>Than<br/>Plan</i> |               |
| <i>Budget</i>         | <i>Actual</i> |   |   | <i>Actual</i> |
| 2,100                 | 2,200         | (100)                                       | Department Payroll:                         |               |
| 400                   | 400           |   | Hourly-Variable                             |               |
|                       |               |   | Hourly-Period                               |               |
| 2,500                 | 2,600         | (100)                                       | Total Straight Time Hourly                  |               |
| 150                   | 100           | 50  | Overtime Penalty                            |               |
| 2,650                 | 2,700         | ( 50)                                       | Total Hourly Payroll                        |               |
| 530                   | 540           | ( 10)                                       | Fringe Benefits                             |               |
| 600                   | 580           | 20  | Electric Power-Variable                     |               |
| 150                   | 200           | ( 50)                                       | Repair Material                             |               |
| 150                   | 180           | ( 30)                                       | Repair Payroll                              |               |
| 800                   | 800           |   | Investment Cost                             |               |
| <u>4,880</u>          | <u>5,000</u>  | <u>(120)</u>                                | Total Controllable Expense                  |               |
|                       |               |   | <b>ANALYSIS</b>                             |               |
|                       |               |   | <b>OF VARIANCES</b>                         |               |
|                       |               | (100)                                       | Variance on Variable Costs                  |               |
|                       |               | ( 20)                                       | Variance on Period Costs                    |               |
|                       |               |   | <b>Production</b>                           |               |
| <u>85,000</u>         | <u>84,138</u> | <u>(862)</u>                                |   |               |

Figure 2



done in this period and maintenance is based on machine operating time.

The change in the unit cost of depreciation is a direct result of the change in volume.

Overhead consists of a variety of expenses. Some of them are: fringe benefits on labor, holidays and vacations, workmen's compensation, sundry building repairs, property taxes, and sundry depreciation. The first two items—fringe benefits and holidays and vacations—are directly associated with departmental control. The other items in overhead are not controllable at this level, so why show them on this report? Show them where they belong. Analyze each expense and determine who has responsibility for it. A report like this one may be useful in product costing, but it certainly has little value for control purposes and that is exactly what it was used for.

Now look at an example of what the report looks like today (Figure 2, bottom). You can see that the emphasis has changed. This company made up its manufacturing cost budgets by estimating what each of the individual expenses would be, based on the estimated production. Then, through a combination of direct charges and allocated charges they arrived at a production cost-center budget similar to the first report. These were combined to come to the total plant budget. While they went through this process of budgeting, the reporting back did not compare actual costs to budgeted costs.

This is one of the first things you notice on the new report. Actual costs are compared to budget and a "Better (Worse) Than Plan" figure is developed. There is also a trend relationship shown by using "year-to-date" reporting. For those items that have a standard cost rate, such as variable labor and variable power, the figures reported back in the budget column are developed by extending the standard rate by the actual activity for the period. Each of the department managers participated in the development of the budget. They did in the old system too, but they feel that this new method of budgeting is easier and the results as reported are more meaningful to them. The emphasis is on costs over which they have control.

### **SYSTEM OF VARIANCE FOLLOW-UP**

The next element that is basic to an effective cost accounting system is a system of variance follow-up. It does not do much good to point out a variance as we have done in our reporting system unless we intend to find out why it occurred and then take corrective action so that

it does not reoccur. The variance may not be caused solely by performance. It may be that the standard is wrong, in which case the standard should be changed. Some people feel that the only variances that should be analyzed and explained are those that are unfavorable. They somehow feel that the favorable variances are all the result of good performance and also represent conservative cost practices. What they fail to realize is the possibility that the standard may have been set too low so that it could easily be bettered and thereby give an erroneous impression of performance. Also, by having the standard set at an unrealistically high cost for the particular operation it could be that the company is costing itself out of a competitive market.

If the reporting system is properly structured, there will be no need for top management to receive all the individual cost reports. The report of variances in detail at the cost-center level will pyramid in total to the next higher level and so on up to the top so that top management is only looking at a condensed report of variances. If the company has gone through the process of planning ahead, and this applies to small companies as well as to large companies, and if these plans have been approved at all levels of responsibility from the bottom to the top, then there is no need to show the details of operations to the top levels. Their main interest is in how well actual performance met planned performance and if it did not, what was the cause and who was responsible.

## CONCLUSION

These comments presuppose that management is interested in these reports and will take appropriate steps to reward good performance and to correct poor performance. Taking these steps is a must, because if top management is not interested, middle management is probably not interested, and those responsible for below-standard performance will care less. The benefit associated with responsibility reporting will be lost.

A cost accounting system needs to reflect the actual operation of the business. There is no excuse for a system that does not provide such basic information as the cost of raw materials purchased for the year, yet I have seen systems in which this information could only be obtained by going through an elaborate analysis using some broad assumptions. This situation should never occur. If there is a need to supply certain information on a routine basis then the chart of accounts should be set up so this information can be readily extracted from the ledger. This is

particularly true today when more companies doing government work are receiving requests from the government regarding certain information on their operation. If these requirements are known in advance, and some of them are since they are routine, then it is a simple matter to make provision for them. But if no provision is made in advance, these sometimes require many hours of analysis work to extract from the records.

A cost accounting system should be dynamic. If standards are not current, they should be revised. As a minimum they should be reviewed on an annual basis. Those responsible for furnishing the factors that make up the standard should be the ones responsible for notifying the cost accounting department when these factors have changed. If the standard cost make-up is sufficiently detailed, the change in any factor making up the standard can be readily reflected. One author in an article on cost accounting stated the case rather well when he wrote, "Cost accounting is utilitarian. Stated another way, cost accounting is not an end in itself, but a means to an end—which is why the uses to be made of cost data are so important. Just how good the cost accounting is, is determined not by reference to a stated body of principles or to established concepts, but in terms of how well the accounting does in fact meet the needs which it is intended to serve."<sup>1</sup> This is what a dynamic cost accounting system does.



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<sup>1</sup> Raymond P. Marple, "Direct Costing and the Use of Cost Data," *The Accounting Review*, July, 1955, p. 430.