

DEPARTMENT OF MAINTENANCE

Developing a System of Cost Accounting for County Highway Departments

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The paper surveys the problem of putting the accepted management tool of cost accounting to work for the largest functional cost of local government. A step-by-step approach is used, and problems which may arise are outlined at each stage. The stages covered are as follows:

1. Objectives of a cost accounting system for county highway departments.
2. Need for knowledge of basic accounting problems.
3. Analysis of physical layout and administrative organization of the departments.
4. Determination of what information is needed.
5. Creation of flow chart for information.
6. Analysis of various methods of gathering, summarizing, and analyzing cost accounting data.
7. Establishment of a workable cost accounting system.

Concluding remarks deal with the key problem of recruiting suitable manpower for the cost accounting study.

• THE TECHNIQUES for putting the accepted management tool of cost accounting to work for the largest functional cost of local government are surveyed in this paper. A step-by-step approach is used, and problems which may arise are outlined at each stage.

Even though cost accounting has become widely accepted by private enterprise, state and local government agencies have only begun to use cost analysis. As a result of increasing tax burdens government is under greater pressure to become more efficient.

The Bureau of Government Research of Indiana University has spent the last two years developing a cost accounting system for Indiana county highway

departments. Many of the points presented are the result of experience in this area.

Although pressure on local officials for cost control may come from any one of several sources, the approach presented contains the major steps which should be considered, in approximately the order presented.

STEPS

Objectives and General Requirements

Before starting any project with various goals, it is essential to have the objectives clearly in mind. For illustrative purposes, the objectives are (a) to

improve control over the assets of the agency, (b) to separate significant costs for discovery of problems and as an aid to decision making, and (c) to make possible the comparison of information concerning alternative methods, equipment, and policies.

The first objective, improving control over the assets of the agency, undoubtedly would be of greatest significance in a county with a large work force and/or land area factors which complicate close supervision over the use of the assets. Not only should control be of concern for the use of materials and supplies; it also may be of equal or even greater significance in avoiding losses from idleness of men and equipment. Stronger control will indicate the lack of balance in assets owned, with some assets wasted or stored. Excessive storage of materials and supplies does not permit the county to provide maximum service for the dollars available because dollars are idle, and storage creates additional expense. Equipment losses occur simply because new and better equipment is being produced every day, and the relative advantage of each piece of equipment owned by the highway department diminishes. Even if technology did not bring change, changes in public demand and personnel would have the same type of impact on the worth of the assets.

With these changes, it becomes imperative to review periodically the balance of equipment, manpower, and building supplies to make reasonably sure that every economical effort is made to maximize the benefits from each tax dollar. Observations indicate that a new cycle of county highway administrative evolution is occurring in Indiana. At first, county road maintenance was done by one or, at most, a few men in the township. In the next stage, the values of centralization became apparent and a unit operation came into existence. All the men started at one place except for a few men who operated heavy equipment. The third change, as some of the counties became densely populated, has been to create more starting points and establish somewhat equal maintenance

districts. Certainly the size, shape, and topography of a county have been important factors and have affected the evolution. Once the unit or near-unit form came into existence, the county found it possible, and usually desirable, to start gathering more information for administrative use.

Separating significant costs for discovery of problems and as an aid to decision making would seem an objective requiring little discussion. Certainly it would be foolish to gather information from which growing problems or possible improvements could not be observed. As policies are formulated and modified, financial changes occur. Special activities and programs of the department need to be separated to permit cost control and the examination of unit costs of each type of service performed. The organization of the department also represents a principal factor in the separation of costs.

The third objective was making possible the comparison of information concerning alternative methods, equipment, and policies. Almost immediately contacts with counties made it plain that many conflicting opinions have served as foundations for the policies that have been used. Obviously some of the problem can be traced back to policies resulting from all-too flexible oral instructions, or even the lack of any policy at all. (A policy is defined here as any governing principle, plan or course of action.) This situation reveals an unmistakable need for counties to be both willing and able to look beyond their county line. The availability of equipment data has convinced some Indiana counties that there is a strong case for maintaining comparable cost-per-unit information for other jurisdictions.

There are some guides which shall be referred to here as general requirements. First, the system must be reasonable. If the field information demanded is excessive, some of the information will be slighted. Without sufficient field reporting the reports are more than worthless; they are dangerous particularly when an administrator relies en-

tirely on the data at hand when making a decision.

All management decisions must give consideration to the benefit/cost ratio. In the decision to create, add to, or delete from a cost accounting system, the benefit/cost ratio is a factor. This benefit/cost ratio is no more static than any other phase of the department's operations.

Another important factor to consider is capacity, both of the reporting personnel and of the users of the reports. Incomprehensible reports are useless, and all reports should be used on the basis of reliability and comprehension. Initially cost records are only supplemental records and should not take the place of legal records. Later, as the cost records become more complete, alterations may be desirable to coordinate cost records with the required legal records.

Basic Accounting Problems

The second step to be considered is the need on the part of persons participating in the development of cost accounting to be aware of the basic accounting problems which are always present and which should be minimized to avoid the collapse of the system. Three of the key problems are (a) terminology, (b) volume, and (c) allocation of indirect expenses.

In the states that have started uniform cost accounting systems for county highway departments, the terminology problem has received the greatest emphasis. This emphasis has been well placed, since the value of records is directly related to the degree of understanding by the men that use them. Terminology includes the chart of accounts, the definition of terms and explanations by example and illustration. Changing technology will continually require that attention be given to determining the proper classification of items. If the designers of the cost system fail to recognize the volume of data they may not select the most economical techniques for handling the data. When

slow and more expensive methods are used for compiling the data, the benefits are reduced and the cost increases. This may result in an unfavorable benefit/cost ratio.

With growing administrative expenses the failure to recognize the need for allocating indirect expenses may result in decisions based on insufficient evidence. The allocation problem is not an easy one, but there needs to be a recognition of the problem, with adjustments to improve the allocations whenever it is practical to do so.

Organization and Facilities

The importance of considering the organization and facilities of departmental operation has been clearly shown by questionnaires that the Bureau of Government Research has sent relating to personnel by classifications, and to operations which contained information on facilities. The questionnaires revealed a wide range of policies. Also, field trips added considerable understanding to the brief responses. The location of personnel, the point of departure for crews, the means of communication, the degree of centralization, and the duties of personnel considered to be in the office force are all information that should be known and understood before creating a record system.

Information Needs

Keeping in mind the limitations of personnel, the information that the administrations could and would use should be considered. Each county should find out what information is already available. By going over the existing records, perhaps the desired data can be obtained with only a minor change. Consultation with other counties, either in the state or in other states may show what records and information are thought helpful. Priority should be given to information based on the significance of the dollars involved.

Flow Charts

The preparation of a flow chart should follow the acquisition of data about the organization, facilities, and information needed. Such a chart will help the administrators form the basic policies for the cost record system. The flow and assembly process should consider other duties and capacities of the personnel. The board of commissioners (supervisors or judges) should understand the system if they are to be firm supporters. Without a reasonably smooth flow of information the system will have little chance to survive long enough to prove itself. Some counties in Indiana have field employees assemble data as well as report their activities. It is evident that if too much is demanded of the field employee, the administrators will soon be aware of it. Field reports are valuable as a means of immediately transmitting data to the supervisors. Supervisory personnel should be the first to examine the individual field reports. Delays in the flow of information will deny the administration some current facts that could result in a different course of action.

Methods of Gathering, Summarizing, and Analyzing Cost Data

Once the flow is determined the speed of handling cost data comes into focus. The knowledge gained earlier about the quantity of information, the county's facilities and techniques used by others, should be applied to the problem. An average county finds the development cost practically prohibitive; many blind alleys or short cuts could be seen if time would permit a thorough search. A single person cannot acquire sufficient knowledge by a short or part-time investigation into the systems area. At this point, it becomes imperative to have a systems specialist working on the problem.

Facts that are not analyzed do not result in the potential yield being realized. Limited experience of many local clerical personnel and administrators with accounting data has kept the existing records from being used where they could be of assistance. A central

statistical center may be used to overcome local staff shortages, to increase the benefits, and to bring the cost of the system down. The Indiana project is bringing together equipment operating and repair costs, and use information (in miles and hours).

This centralized service has reduced the cost by overcoming a local calculating machine shortage, and has increased the amount of comparative equipment information for use as an aid to equipment decisions. Experience with the equipment tabulation has encouraged the start of a time distribution tabulation for both manhours and equipment hours, and the development of a material claim verification and distribution analysis. The direct cost of preparing these reports is extremely low related to the recognized benefits.

Installation of a Workable System

At first, a few counties should begin to use the parts of the system which will not appreciably disrupt the records in use. The chart of accounts and definitions should be brought into focus and discussed many times. Failure to give the terminology sufficient time to season would be like placing a pavement on top of an unstablized base.

During its beginning the cost system must be subject to change as hidden problems are uncovered. The field worker who coordinates the development must use the information from the experiences of the few and the general knowledge of other counties to make changes. Obviously, changes early in the development can be made much easier with only a few people to reeducate. As a county starts cost record keeping it should not try to assimilate all phases at once, but only those it can carry out. Generally in Indiana the counties have started to keep equipment data, then time information, or material distribution figures, next a cost ledger for projects, and finally a functional cost ledger for maintenance, construction and betterments. Expansion of the participation within a state should take

place gradually. Some counties have more advanced records and may be more reluctant to change until the system is reasonably complete. Once a uniform system is installed it is not necessarily complete, but must be adapted to needs—on a uniform basis.

Because field personnel will cause the success or failure of the system, the entire highway department should be oriented, and then, by a process of continuing education be kept informed of the uses made of broader reports based on field reports.

Clear identification of equipment, bridges, and roads is a significant help in reducing the effort of the field employee and will improve the accuracy of reporting. Most Indiana counties that have identified items ask for field reports. Correct identification is a necessary condition to the establishment of very extensive cost records. The identification system often makes it reasonable to begin or to improve field reporting.

Before the development is expanded to the entire state, the system should be described in a manual or guidebook. As segments of the system become clearly determined, a draft report should be presented to the affected counties for their reaction.

Recruiting a staff for this work is a problem which can not be overemphasized. From experience, sales ability, keen observation, and sensitivity to need are of equal importance to technical accounting knowledge. The technician must keep the participants fully informed and aware that the system is

their system and that it simply follows their specifications.

Those who have gone through this experience in Indiana and in other states have frequently expressed the conviction that the system should not be built in haste; but that before you can enjoy the fruit which the records can yield, you must plant the seed and nurture it for some time.

SUMMARY

1. Determine the objectives and general requirements which the cost accounting system must follow.

2. Become familiar with the basic accounting problems confronted in the case.

3. Understand the administrative organizations and know what facilities are in existence for all or for each county.

4. Formulate the reports and other information which would be useful to and used by the administration.

5. By use of flow charts, determine more clearly the way the system will function to transmit the field information to the office and be assembled.

6. Investigate the various methods of gathering, summarizing, and analyzing the data.

7. Although the installation is presented as a last step, it is one which is never complete. The initial installation of a system is the beginning of a continual process, but in time should not require extensive annual adjustments. It should result in a useful cost accounting system supported by a favorable benefit/cost ratio.