The Use of Management Information Systems in Volunteer Program Management

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Management information systems are effective tools which can be used by the managers of volunteer programs to increase the effectiveness and efficiency of their operation. Most managers see management information systems as complex automated processes requiring substantial allocation of resources and sophistication of staff. But management information systems and their use are more a matter of orientation than a matter of complexity. In essence, "management information" refers to the systematic collection, storage and analysis of data which can be used by managers to make effective decisions in the maintenance and modification of their programs. The collection of data can be by hand, the storage of data can be made on mimeographed summary sheets, and the analysis of data can involve the computation of simple totals and percentages. If the information is systematically and continuously collected, the most basic of information provides the manager of the smallest program with fact rather than belief as a basis for making management decisions. A recent development, however, has been the availability of micro-computer technology. These small, relatively inexpensive units can bring the cost of automated management information systems within the reach of many smaller programs (Taylor, 1981). Management information systems can range from complex computer based systems to basic hard copy systems.

The information developed by a management information system can have serious consequences. The fact that information developed through the use of these techniques is used to make decisions which alter programs and which affect human lives mandates the application of the most rigorous criteria in the data gathering process. The standards applied in each stage of the project must be as high as that applied in theoretical research projects. It should be noted that the procedures for gathering and analyzing information are or should be the same regardless of the application of the data gathered.

MANAGEMENT INFORMATION SYSTEMS

A management information system is a process in which information is gathered on a regular and routine basis for the purpose of monitoring the operation of a program; providing a data base for making decisions about the allocation of resources and modification of program components; and making cost assessments, cost-out-

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come assessments, or outcome assessments (Washington, 1980). An effective management information system becomes the basis for decision-making in both daily operations and long range planning. In the loose sense of the concept, management information refers to all of the decision-relevant information a program coordinator needs to manage effectively any operation or program.

While management information systems have existed in the private sector for many years, public agencies and volunteer programs are in the early stages of the development and implementation of these programs. As is the case in evaluation research, the need for accountability has facilitated the adoption of management information systems. Public and private nonprofit agencies are expected to operate in an effective, rational, well-planned manner. Public dissatisfaction with the level of performance in public agencies has encouraged the development of effective information systems for both increasing the efficiency and effectiveness of program operations, and for rationalization of the decision-making process in the public policy setting (Perlmutter and Slavin, 1980). This need has produced techniques such as "zero-base budgeting," Program Planning and Budgetary System (PPBS), and Goal-Oriented Social Services (GOSS). Because this process is located in a political-survival context, the pressure to obtain the "right" information is often strong (Weiss, 1972). For this reason, extraordinary care must be taken to protect the quality of the data gathered to insure objective, unbiased measurements.

From a measurement perspective, there are two different tasks in most management information systems. The first task is the measurement of goal accomplishment or outcome. The second is the measurement of specific aspects of program operations.

The goal assessment or outcome measurement component of the management information system is similar to the implementation of an evaluation research project on a continuous basis. Many evaluation research projects are one-shot approaches to the development of information. The volunteer program is evaluated at one time, producing information about the effectiveness of the program at that time. In management information systems, which are designed to measure goal accomplishment or outcomes, the measurements are a part of the routine procedures and can be summarized at regular intervals, providing a relatively continuous assessment of volunteer program "success" as measured by the specific outcomes targeted for measurement.

The measurement of specific program maintenance or routine operations is usually the primary process in management information systems. The volunteer program is defined in terms of the processes which occur as the program functions and/or achieves goals. A measurement is designed for each of the processes which monitors the rate, and in some cases, the quality of the action which is occurring during the process. One example of this type of operation would be accounting processes. This information is summarized at regular intervals and is used to guide decisions about each process in terms of other processes and the overall operations of the program. In other instances, the management information is designed to operate with some degree of autonomy. That is, specific "triggers" are established for the various measures. When the rate of activity increases or falls to the trigger point, the operation of the process is adjusted. In this sense, management information systems have developed from cybernetic and basic feedback system theory.

MANAGEMENT FEEDBACK PROCESSES

The concepts of management

feedback processes can be traced to general systems theory and to the basic cybernetics feedback model. There are three basic components: a receptor, a controller, and an effector. The receptor monitors the fluctuation in a variable or variables. When the fluctuations exceed specific levels the controller is signaled. The controller then activates an effector which intervenes until the system is in balance or within the parameters set for the receptor (Wiener, 1965).

Feedback operates in two ways. In a negative feedback system the level of activity is reduced. In volunteer programs, the number of clients or tasks accepted is determined by the available person power. As the pool of available volunteers is exhausted, the number of new clients or tasks accepted by the program is decreased. Agencies receiving services from the volunteer program would be advised to seek additional resources in accomplishing their tasks.

In positive feedback the output in the process is increased. In the case of matching available volunteers with client or task needs, control of production is just one alternative. The response could be an increase in recruitment efforts and expansion of the volunteer program to meet increasing needs for services.

It is possible to use both positive and negative feedback components in the same management information system and in the same process. That is, the volunteer program could control the rising level of services to be delivered through careful review of present capability while increasing recruitment efforts and planning for future growth. In a fairly stable need situation, the increase or decrease in recruitment efforts could be tied to increase and decrease in the size of the available pool of volunteers ready for assignment, and in the screening and training components of volunteer preparations.

Maintenance components can be automatic or can provide information for administrators to use in managing agencies or programs. In automatic systems, the information is generated and assessed by machines or by a human operator. Guidelines have been established for most conceivable contingencies. Specific responses ranging from no action to minor changes, or referral to management for further consideration are defined and are implemented. If the contingencies are within the group of contingencies for which responses have been established, the response is automatic in that it is made without further evaluation of the facts or circumstances in the situation. When no specific response has been defined, management is alerted with additional information or clarification sought followed by a specific appropriate response. Extraordinary care should be taken in the development of a system with automatic components to avoid the embarrassment which is created when the system works improperly. When the responses of the volunteer program staff or volunteers are not monitored, errors can become significant before they are noticed. It is also best to provide for regular monitoring of program operations to insure continuous smooth performance.

Most volunteer program information systems are not automatic. Most volunteer programs need to maintain the maximum amount of flexibility in response. Volunteer program management information systems tend to be reflective rather than reactive. The system develops information which is summarized on a regular basis for managers. Volunteer program managers evaluate the information and develop a response or intervention if a response is warranted. In this approach, contingencies and responses are not predefined. There are usually triggers or response thresholds in the system, but when the threshold is reached, the manager is notified that a situation requiring an intervention exists.

The manager reviews the situation, then develops and implements a response.

DESIGNING A MANAGEMENT INFORMATION SYSTEM

In designing a management information system, the basic tools of measurement and design characteristic of research are used. Thus any of the basic techniques and approaches described in texts focusing on social science research can be used in the design.

Staff Involvement

The human factor in system design must be considered in systems development. It must be remembered that people will contribute the data, run the system and make use of the information the system develops. Their involvement, therefore, is critical.

The management of the volunteer program must, of necessity, be involved in the development of the management information system. Management makes crucial decisions and so the information developed by a management information system must be relevant to the decisions to be made. As Senn (1978:17) notes: "The primary emphasis of Management Information System is that of providing decision support to management . . . . " Chapman (1976:11) states that: "Nothing can extinguish a Management Information System quicker than the fact that its reports are not used to make a difference in resource allocation." The manager, then, must participate, so that he or she can specify the information he/she needs, and develop a supportive attitude toward the management information system and its products. Senn (1978:38) states that "successful management information system efforts require the direct involvement and participation of the managers who will use the system."

Staff must also be involved in the system design process. Chapman (1976:11) observes that "the agency's staff should participate in the design process. Not only is this essential for the system to be acceptable to the people who must work with it, but personnel at all levels have useful contributions to make." Systems designed in the abstract may be unworkable in the field. The management information system designer may have insufficient or inappropriate understanding of the task environment. Early involvement by actual users can prevent this problem.

Acceptance of the system is also critical. If a system is not accepted by the volunteers and paid staff, they may not furnish accurate information or any information. Social scientists (Rothman, 1974; Burke, 1979) have found that people are more likely to support plans that they have been involved in formulating.

Taylor (1980:29) notes: "The computer always threatens to disrupt the power balance within an organization." This can be a serious problem. We cannot expect staff to furnish needed data if they perceive it as a weapon to be used against them. Taylor (1981:29) goes on to say that "the trick is to design the information system so that balance of power is not disrupted. This requires that all levels of staff have a chance to reflect on the system's implications for themselves and for their work." Regardless of program size, paid and nonpaid staff with management responsibilities should be involved in the development of the management information system.

Designing a System

The first step in the development of a management information system is the identification of the goals or anticipated outcomes of the volunteer program. In most cases, this is a fairly straightforward process. The goals or outcomes are fairly visible and only need to be clearly defined. In some volunteer programs, however, the goals and products are not easily identified or defined. In many cases the goal is the maintenance of a particular process. Thus, the goals of a program which provides guides

for the local museum include: providing information; conducting tours; explaining special exhibits; and operating information slide shows. These goals can be identified and defined for the management information system with some attention to characteristics of the process as a part of the goal. Thus, in the sample museum program, the amount of time required to provide a guide or perhaps the number of tours conducted or percentage of visitors served becomes a part of the goal statement.

Once the goals have been identified and clearly defined, the specific activities which are required to achieve the goals are identified and clearly defined. This articulation can lead to changes in the procedures and processes of the program. If some procedures appear to be counterproductive or fail to contribute to the goals, or if some procedures which are necessary for goal achievement are missing, the volunteer program is modified so that the goals, procedures, and processes of the program are consistent. The result is a clear statement of the goals and processes of the volunteer program in fine detail. As mentioned earlier, resistance can be anticipated here.

For each process and goal, measures are developed and each goal is defined in measurable terms. The scales needed to measure the appropriate outcomes are developed. The same procedure is followed in developing measures for each processes. Measurable factors in each process which track or monitor the flow of productivity are identified and scales are developed for each factor. The factors designated for measurement must constitute, in combination, a complete tracking system for the processes which constitute the operations of the volunteer program. That is, the measures measure every key factor in the operations of the program.

Measures for the processes should be diagnostic rather than success-failure measures. That is, the measures should provide descriptive information which can be used in planning, rather than information which simply indicates that the system is working or not working. At the simplest level, this means using an expanded scale rather than a two-point threshold scale. Thus, if the measure monitors the placement of children in foster homes in a volunteer program which recruits, screens, and trains foster parents for the juvenile court, the measure should be the number of children placed as an unreduced fraction with the number of children who need placement as the base. The development of diagnostic measures can also include choosing measures which focus on various aspects of the process rather than the immediate procedural outcomes.

If the measurement focuses on the volunteer recruitment process, measures might include: type of advertisement reported during inquiries, source of referrals; reasons for making the inquiry; reasons for pursuing and not pursuing further involvement; evaluation of rejection rates or success rates of screening staff; and any other measures which would tell the manager which tools and techniques are effective and ineffective. Thus, if the number or percent of successfully-recruited volunteers declines, the manager will be able to assess specific tools and tasks as contributory factors. A more refined system would track specific elements or factors which make volunteers difficult to recruit. With this type of information, the specific type or types of procedures which are impeding performance can be identified, permitting the development of targeted procedural changes or development of specific resources to improve performance.

Measures should also be designed so that they are as unobtrusive as possible. Senn (1978:23) feels that a management information system should be "a natural part of daily activities." Information systems tend to operate most effectively when the

data is generated as a part of the normal operations of the volunteer program or agency. Programs with fully automated data processing equipment are better equipped to implement an effective management information system. In these cases, a large volume of information is routinely collected and stored in an accessible format. Subtle changes in the types of information collected and the manner of collection will often permit the development of an effective management information system in an automated agency.

Most volunteer programs do not have access to the equipment needed to maintain fully automated or even partially automated systems. When a management information system is developed for a program with a non-automated information system, care must be taken to develop forms and procedures which will make the collection of data a part of the normal routine of the staff. Because collection of data in management information systems is continuous, the data is collected by agency employees who have other responsibilities as well. Those other responsibilities tend to be their primary job responsibilities and so care must be taken to build measurement tasks into these primary job functions. The routinization of these tasks will also protect the quality of the data. Routine tasks once learned and implemented tend to be repeated regularly. The task should be divided into fairly simple steps. Any complexity should occur during the design phases and data analysis phases of the process. These principles apply to one and two person agencies as well as to larger operations. The consistent, regular recording of information provides fact instead of belief for making program management decisions regardless of the size of the program.

Training for the staff is essential (Chapman, 1976; Taylor, 1981). Training will provide the staff person with an essential knowledge of the operation of the management information system and, more importantly, his or her role in it. Documentation is also vital (Taylor, 1981; Chapman, 1976). A well-articulated description of the processes of the management information system can provide a basis for implementing and maintaining it.

USING MANAGEMENT INFORMATION SYSTEM DATA

In management information systems, data is collected and stored on a regular basis. The data is summarized and analyzed at specific predefined periods or when management needs information. In fully automated systems the summarization of data is a relatively simple process. A program or summary procedure is developed during the planning and implementation process. When summary data is required it is drawn from the system. The same process can be established for a non-automated system. As each event which is monitored occurs, it is recorded on a summary sheet. When summary information is required, the summary sheets are pulled and the data is summarized.

Since most volunteer program management information systems are non-automated, summary sheets are already fairly common because of the need to record hours of service and similar accountability data. For example, if the progress of a match in a one-to-one direct client service program is to be tracked, then each report filed by the volunteer or the volunteer supervisor will be recorded on summary sheets. Thus, when a report is written it is noted on the appropriate summary sheet in the manager's or secretary's office by a unique identifier as the activity report is processed. Each meeting of the volunteer with the client or a monthly case summary will generate a written report. The presence of the report and the type of action taken is recorded on appropriate summary sheets in the office as the report is placed in the client or vol-

unteer file.

Such summary sheets constitute the primary information in the management information system which is concerned with the operation of the process rather than the specific facts in any particular case. In this example, information is available about: the number of matches; the number of contacts; types of problems; types of activities; types of achievement; and, if recorded at the conclusion of the match, an assessment of the relative success of the process in meeting the client's needs. The data could also be summarized by type of problem, by type of outcome, or by any other factor which the system is designed to measure.

Regular summarization and review of data provides the information for regular monitoring of agency operations. The level of operation of each component of the volunteer program is reviewed in terms of expectations for performance of that component. If the information indicates that the component is functioning below expected level or if the amount of work to be completed has exceeded anticipated work level then adjustments need to be made. If the functioning of the modified component affects the operations of other components, then the level of operation of all affected components are reviewed and can be modified. If assignment data indicates that the available volunteers lack the skills needed to provide the services in demand, the location of additional resources or the development of targeted procedures for recruitment can be coupled with the allocation of additional resources or the development of expedited procedures for training. These changes would produce a volunteer prepared to provide the needed services. Information from the management information system is used in this manner to make adjustments in volunteer operations on a regular or continuous basis to enhance program effectiveness and efficiency.

Management information system data can also be used in planning. Once the system has been in operation for more than a year, a data base is established. That is, summary information is available for one or more years of operation. As this data base is developed the data can be evaluated for patterns and trends. To some extent the patterns which emerge in the first years of operation that require agency adjustments can be anticipated. Plans can be made to modify agency operations to meet the needs of the agency as they emerge. This concept can best be illustrated by considering fluctuations in the recruitment process. Some months are better months for volunteer recruitment than other months. Information gathered from prior years will indicate the strong and weak months. The manager can then allocate more resources to recruiting in highly productive months and reduce allocations in weak months. At the same time, the size of the pool of volunteers available for assignment will be expected to vary as the program moves from good months to bad months and back again to good months. Targets can be set for the size of the resource pool for the beginning of each month to insure a steady supply of volunteers. To the extent that a volunteer program gathers information about outcomes and processes and uses the information to modify program operations, it is using a management information process. The extension of this approach to all or most aspects of the volunteer program operations produces a management information system.

Planning can also involve change based on management information system data. Information developed may indicate weaknesses or inadequacies in program operations. In the planning process, changes in agency procedures or allocations of resources are made to strengthen the agency's operations and eliminate inadequacies. Management informa-

tion systems also provide information which can be used when planning for a change in agency goals or purposes. If a state changes its Juvenile Court Act to raise the age limit on juvenile court jurisdiction, juvenile and adult court information systems can be used to project the size of the increased caseload. Volunteer program management information system data can be used to project increases in resources at each level needed to maintain effective volunteer program operations. The more sophisticated the management information system, the more refined the planning process recommendation will be.

SUMMARY

The management information system is a useful tool for managers of volunteer programs of any size. Management information systems provide factual data which can be used in making management decisions. Because this data is used to make decisions about programs and human beings, care should be taken to insure that data collection and analysis processes be of the highest possible quality. Basic research techniques from the social sciences can be used to develop designs and measurement tools. Management information systems can have both outcome and process components. In either case, the measurements developed should be diagnostic so that the manager will have precise information about the part of the process which will need modification to improve the effectiveness and efficiency of volunteer program operations.

Each volunteer program manager should assure the possible applications of management information procedures to his/her program. The increase in the quality of program management should outweigh the costs in virtually every case.

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