6

Coordinating

Quality control requires establishing human and mechanical measures that identify weaknesses, correct those weaknesses, and evaluate the results for continuing development. Assessment and coordination activities are critical for understanding library customers and offering services, spaces, collections, and tools that best meet their needs. They also help establish accountability. Evaluation techniques, such as performance measures, output indicators, program impact indicators and tools are useful in that process. Tools such as unit cost, cost accounting, cost-benefit analysis, and cost-effectiveness and budgeting are examples of techniques and tools employed to measure effectiveness and efficiency. Financial health is a key element in a successful equation of information services. No other element can be successfully developed without strong financial support. However, many elements cannot and should not be measured in strictly monetary terms.

Coordination implies the existence of workable plans with identified and realistic goals. This enhances the development of regulations and focuses organizational activities on those goals and objectives. With that commitment in place, tools and techniques can strengthen accountability and aid progress toward meeting established goals. In order to remain accountable, a library or information center must evaluate its performance to ensure that both the human and the material resources are effectively and efficiently employed toward achieving their goals and those of the larger institution of which it is a part.

Coordination is inextricably tied to the planning process because it is impossible to effectively plan without knowing how success of that plan can be measured. The whole management process can be viewed as a circle, with the evaluation step in the decision-making process being the component that completes the circle and brings the organization back, full circle, to future

planning. This is, of course, necessary in the change cycle of organizations. The function of coordinating and controlling in order that good decisions can be made requires accurate and timely information. The budgeting aspect pulls together the various pieces of an organizational plan and relates it to the services plan in monetary terms.

This section addresses the most important tools and techniques necessary for today's information services organizations.

Measuring, Evaluating, and Coordinating Organizational Performance

i Overview

It is time for the annual review of performance of city agencies in this large midwestern city. City Council President Jim Ryan has called an emergency meeting with stern warning that this review session of city agencies might not be a pleasant one because of growing concerns about inflation and out-of-control spending over the last several years. "Some services definitely need to be curtailed or even cut," he states as he concludes his somber opening remarks. The first item on the agenda is the library's budget and how it relates to the needs of the community. Although all city agencies are under scrutiny, Jim relates the gist of a recent conversation he had with a constituent who questioned the continuing almost blind support for the library as a "public good." The phrase that constituent had used in concluding his opposition was that "Large amounts of money are being stuffed down that hole, and for what purpose?" Placed into the context of limited financial resources and that comment, Jim is determined to pursue the need for concrete data to support the escalating costs of the library. What convincing data does the library have; what proof can the library staff provide of their "worth" and need for continuous support at a substantial level? What kind of support is there in the community as to the success, or failure, of programs and use?

A number of tools and techniques have been developed and are employed by library and information services organizations to answer those questions with legitimacy and authority. Some basic ones are quantitative in nature, others are qualitative measures that have been developed to mea-

sure outcomes and observe value—how people use and value information accessed through services and systems of the library.

This chapter discusses some of the most important measurement tools and techniques that have been developed to improve information services.

MEASURING AND EVALUATING

During the recent past, with dramatic shifts in the nature of information access and information services, coordinating and control aspects of an information services organization have become more pervasive, committing personnel at all levels to accountability in services quality. The process of reaching this point of accountability has involved development of several levels and types of measures:

1. Input measures, including both:
   a. resources input; that is, budget, staff, facilities, materials, equipment;
   b. activities input; that is, programs developed to fulfill identified goals.

2. Output measures: The various products of program activities, measured by accomplishments (usually counted in numbers: number of books circulated, number of reference questions answered, etc.).

3 Outcomes assessments: The benefits or changes for individuals or populations during or after participating in activities, including, for instance, acquired knowledge or skills, changed attitudes or values, improvement in status or conditions, and so forth. They relate to inputs in order to identify and establish best practices for future services.

The process of measuring, evaluating, and coordinating an organization's performance through identifying and developing output measures and then assessing their success is now, more than ever before, an essential component in the planning process. The concept of measuring user-centered information services through user satisfaction has been incorporated in many strategic planning processes. This has come about through realization that accountability requires assessing outcomes and determination of success in the effort. Management strategies now more stringently address customer needs and satisfaction rather than simply quantifying activities as organizational inputs and tasks. This shift requires understanding user needs, their information-seeking patterns, and ultimate satisfaction, with focus on positive user outcomes.

One major reason for the shift is that users and other stakeholders have become more sophisticated and demands are greater, placing more attention on adaptability and flexibility in services with an information-on-demand attitude. This intense pressure on physical and personnel resources naturally brings with it a greater challenge for quality control. At the same time,

it presents opportunities to conduct reality checks along the way—a meaningful process of accountability that helps determine both the effectiveness and the efficiency of programs and services in the context of the organization's stated goals. Various techniques and tools have been developed and/or adopted by information services organizations to achieve this goal. This process of accountability requires greater attention to use of and proof of value of resources as well as a search for greater efficiency of operation and effectiveness in meeting users' needs. It also promotes efforts to measure the institution's worth in terms of user interaction with its resources and services.

Some Definitions

Performance indicators: An effort to develop decisions and actions in order to guide what an organization does and why it does it.

Input indicators: Measure resources, both human and financial; also can include measures of characteristics of target populations.

Output indicators: Measure the quantity of goods and services produced and the efficiency of production.

Outcomes: Achievement indicator reinforcing an emphasis on a specific performance.

However, this shift does not obviate the need for factual data, which remains one important measure for funding authorities. Traditionally, such statistical data have been collected in input areas, such as expenditures, material resources in analog or digital forms, circulation statistics, cataloging volume, use of catalogs and bibliographic databases, and number of staff, and output areas, such as number of transactions, hours the premises are accessible, and the availability, use, and usability of the material. These statistics also are used for comparative purposes with organizations of similar size and like mission organizations.

Librarians and other information services workers are now also seeking ways of demonstrating deeper quality control along with that quantitative data. Evaluation, accountability, and cost measurement are intertwined in every aspect of the organization's work, and solid performance indicators are required to provide some basis for making some decisions in the strategic planning process.

Qualitative information is gathered from such techniques as focus groups, interviewing, usability studies, and observation, which are but examples of techniques for understanding user behavior and are being utilized to establish value. User satisfaction, coupled with expectations as a performance indicator, is important in the development of such outcome measures as a means of establishing not only user satisfaction but also the impact of library services on communities of users and potential users.

The outcome of those types of tools and techniques enhances efforts to collect more amorphous data from such transactional information sources as library online systems, electronic information sources, consortial use arrangements,

and sources available through the Internet, many of them based on technological innovations that now not only enhance but also challenge traditional modes of production and dissemination of information and measurement of information services.

Performance Indicators

In order to improve performance standards, one technique an organization can use is that of establishing measurements; that is, describe the outcome to be achieved. Therefore, performance measurement is not simply concerned with collecting data associated with a predefined performance goal or standard. The process should be quantitative or qualitative or both, with specific measures expressed in order to determine success of that performance over time. Outcomes are the ways in which library users are changed as a result of their contact with the library's resources and programs.[1] Those outcomes have been identified variously as "benefits or changes" for individuals or populations during or after participating in program activities, including new knowledge, increased skills, changed attitudes or values, modified behavior, improved condition, or altered status (e.g., number of students whose grades improved after homework clinics, number of children who maintained reading skills over the summer as a result of the summer reading program, number of people who report being better able to access and use networked information after attending information literacy classes, etc.). This basically incorporates inputs, activities, and outputs, while adding the important element of outcome assessment.[2]

All types of libraries and information services organizations are attempting to take the next important initiative, having instituted input and output measures, to focusing on outcomes assessment. This, of course, requires first identifying those outcomes to be achieved by the organization. This step beyond instituting "quality and outcome measures"[3] is to develop an outcome assessment process to demonstrate the quality and effectiveness of those services and the impact that they have on the lives of the public, the satisfaction, and the value they add. Currently, that is even more challenging because firm standards for outcome assessments have not yet been fully developed.[4] This is evident in the current environment of the virtual library in which electronic visits are combined with physical access and electronic retrieval competes with circulation. Needless to say, the assessment process must be client centered in order to assess changes in the library users themselves, resulting from the services or resources provided.

This gradual shift in the orientation from a preoccupation with input measures, mostly internal in nature and somewhat limited in effectiveness, to a user orientation, with primary emphasis on those output measures, results, and accountability, has tended to balance quantitative and qualitative factors in the coordinating process. Much more emphasis is being placed on the output factors of service performance and assessment. Quality control, quality audit, and quality assessment are common measurement terms. Those types of performance indicators are being examined, not only from the perspective of librarians but also by stakeholders, those customers and funding authorities that often have varying attitudes about what constitutes efficient and effective

information services. This introduces the concept of coordinating and controlling what is done and the way it is done.

> ## ❓ What Do You Think?
>
> It is not only what we do, but also what we do not do, for which we are accountable.
>
> Molière's admonition provides opportunity to discuss the kinds of measures that are necessary in the effort of information services organizations to become accountable and remain so. What are some of those measures, or lack thereof, that you can identify in your experiences of information seeking?

COORDINATING AND CONTROLLING

Some distinction must be made between the act of coordinating and the control mechanisms used to accomplish it. The two are obviously interrelated: Effective coordinating within an organization depends on the types of controls that are in place. Coordinating is the act, and controls are the means that provide information for decision making. The former pertains to an end, whereas the latter is the means; the first is concerned with events, and the other with facts; one is analytical and operational, concerned with what was and is, whereas the other deals with expectations.[5] The management of resources requires determination of what resources the organization has at its disposal, or should make available, and how those resources can be employed to achieve the mission of the organization. It requires strong financial planning and feedback mechanisms to ensure success.

Control takes into account any action or process that leads to altered results and involves setting standards, establishing criteria, developing policies and budgets, conducting performance evaluations, scheduling actions to achieve objectives, then monitoring the outcome on a periodic basis, and, finally, providing some type of feedback mechanism to ensure efficiency and effectiveness in the achievement, the latter suggesting corrective measures for adjustments or alternatives to the situation. In a library or information center context, controls relate to physical resources, information resources, and human resources. Although the primary aspect is usually a financial one, because no other element can be effectively developed without money, some things cannot and should not be measured in monetary terms. These include those effective performance-of-services measures and customer-satisfaction measures already mentioned.

Requirements for Control

Control implies the existence of goals and plans and the regulation of the organization's activities toward those goals. Controls are concerned with

keeping things on track, successful progress toward meeting specified objectives, identifying operational weakness, and developing corrective action. Whereas plans determine what should be done, controls assure that it is done, acting as the tools and techniques for implementing the planning process. In order to avoid failure, controls are both desirable and, if applied consistently and fairly, necessary. At the operational level, controlling techniques relate to such processes as policies, procedures, task analyses, and job audits. The most effective controls prevent deviations from plans by anticipating that such deviations will occur unless immediate action is taken. However, other types of control are also necessary for feedback, and they naturally emanate from the planning process.

To be effective, controls must be objective and must reflect the job they are to perform. In addition, they should be established and agreed upon before they are needed to minimize conflict and to optimize efforts. At the least, the controls should point out exceptions at critical points. In addition, any control system that does not pose corrective actions after deviations occur is little more than an interesting exercise. In other words, there must be an action plan accompanying the evaluation process. After activities have been initiated, some sort of control mechanism must be established to monitor progress and correct actions, as needed, to achieve goals. Given those guidelines, individuals at all levels are responsible for steering the organization on the right course. Controls, wherever they are found and whatever they control, involve three basic steps:

1. Establishing standards.
2. Measuring performance against standards.
3. Correcting deviations.

The ultimate act of controlling in the library and information services setting is, to some degree, external because most information centers are accountable to higher public- or private-sector authorities that provide primary impetus and funding for the operations of the information services organization. The library or information center usually is legally bound by constitutional provisions, charters, articles of incorporation, and general or special laws applicable to the greater institution as a whole. Ultimate responsibility is coordinated by a president, superintendent, mayor or city manager, executive director, board of overseers, board of directors, and so forth. These external authorities are responsible through their overall institutional or societal charge and because of their funding and fiduciary mandate.

In addition to those bodies directly related to the controlling function of an information services organization, numerous outside groups, some with sanctioning powers, are involved in various aspects of the operation, including standard setting, certification, and accreditation of libraries, librarians, and other information specialists. For example, the North Central Association of College and Secondary Schools, a regional agency in the United States, is a responsible accrediting body that observes and makes recommendations on libraries as a part of its overall review of higher education institutions. The American Library Association influences library support through the

establishment of standards for various types of libraries and library services and through its Committee on Accreditation, which is responsible for setting standards for library and information science education and accrediting those institutions that meet the set standards. State departments of education establish guidelines for the certification of school librarians or media specialists and establish standard formulas for the allocation of funds, and specialty-specific interest groups, such as the Medical Library Association, set certification standards and continuing education requirements for their members.

Some groups and agencies exist primarily to regulate activities of organizations and institutions and to measure, to one extent or another, their actions and outputs. Laws, including local, state, national, and international ones, regulate certain activities. For example, planning, constructing, and maintaining library buildings may be controlled through municipal ordinances and regulations, building codes, zoning, and fire regulations, and international copyright agreements or international standards promulgated by the International Standards Organization (ISO) or those that are on the agenda of the World Intellectual Property Organization (WIPO) may direct the services or activities of an information center. Comprehensive legislation, for instance, state and federal funding legislation in the United States, places certain other types of control on the operation of libraries and information centers within their jurisdiction. Such regulatory agencies and their authority vary from one part of the world to another, but their influence remains basically the same.

Other bodies that exert some external control on libraries include unions, special interest groups, and political bodies. Through collective bargaining, unions can influence hiring, salaries, working conditions, fringe benefits, and so forth; political bodies can influence the appointments of individuals, the allocation of monies, and even the disbursal of funds within libraries and information centers. Pressure is sometimes placed on information services by outside bodies in areas of hiring new staff and in issues relating to collection development, censorship and intellectual freedom, and use of library services and facilities. Use of the Internet and access to information through libraries remain heatedly debated topics. Groups such as Friends of the Library are examples of well-meaning supporters that may expect to have some say in the directions libraries will take, sometimes in exchange for their charitable contributions.

Try This!

Discuss those various outside influences as they relate to curtailment of good information services. Which have positive influence through their promotion of services and which are more controlling in their activities? Suggest possible promotional activities that are not currently apparent in support groups.

TECHNIQUES FOR EVALUATING ACTIVITIES

Developing Standards

Standards are established criteria against which subsequent performance can be compared and evaluations can be made. Most often they are developed, or at least devised, from organizational goals.[6] Standards fall into two basic classes:

1. Those relating to material and performance, including quality, quantity, cost, and time.
2. Those relating to moral aspects, including the organization's value system and ethical criteria that may be used to establish some sort of code of ethics.

Standards may be physical, representing quantities of products, units of service, work hours, and similar things that can be evidenced and measured through time-and-motion studies; they may be stated in monetary terms, such as costs, revenues, or investments, which are evidenced through record keeping, cost analysis, and budget presentation; or they may be expressed in other terms that measure performance, such as performance ratings and appraisal systems. Of course, some other factors are difficult to evaluate and measure, and they require a different approach to measurement. For instance, how does one measure commitment on the part of individuals to organizational goals? Most of the standards are descriptive in nature, prescribe quantitative objectives, are arbitrarily formulated, and are directed toward evaluating the input of the library's resources. General standards, such as those developed by the American Library Association's various units or other national or international associations, are important as guides, but they cannot necessarily provide meaningful evaluation for the individual library or information center for a number of reasons. A good example is those produced by the Reference and Information Services Division of ALA.[7] Some standards are nebulous and almost impossible to measure, some are simply guidelines for proceeding, and others combine qualitative evaluation with quantitative formulas. If a scientific control method is to be used in developing the standard, then it is most likely measurable to some extent. In every case, to be effective, standards should be acceptable to those whose performance is regulated by them. To be accepted and most effective, the process of applying performance standards should be explained and agreed upon by those affected, rather than forced, because it is only human nature that if standards are forced upon individuals, some resistance is likely to occur.

Measuring Performance

Performance measurement is embedded in the strategic planning process and is an essential feedback mechanism to support decision making in libraries and information services. Such measures are expressed in both quantitative

and qualitative forms, including measures for economic value and financial adequacy, image value, competency, cost of quality, and so forth. Feedback, or measuring performance, is an important factor in this controlling process. It is particularly important as a technique for establishing the value of information services for the benefit of intended customers or funding authorities.

An important next step is the measurement of performance in relation to standards. After standards have been agreed upon, some sort of analysis must be performed to measure the activity against the standard. Techniques such as cost-benefit analysis and time-and-motion studies commonly are employed to measure the standards of performance for operations. Of course, not everything can be quantified; judgment and flexibility are also necessary. However, great care must be taken because subjective judgment may obviate actual performance.

Some types of performance are more difficult to measure because they are more complex, less regulated, and require greater initiative and thus are less quantifiable. In other words, not all quantitative measures accurately reflect the quality of an activity. For example, a rare books cataloger may perform original cataloging on two items during an eight-hour period. The quality of that activity must be measured delicately, objectively, and with full understanding of all nuances involved.

Increasing attention has been paid to performance measures in libraries and information services, as is particularly evident in international conferences on the topic.[8] There are a number of questions that "outline the different 'hows' of measurement and, in effect, encompass input, output, performance, and outcomes measures. The questions can be used individually or in groups. In fact, some of the 'hows' are calculated by using data derived from other 'hows.'" Simply stated, these questions focus on "How much?" "How many?" "How economical?" "How prompt?" "How valuable?" "How reliable?" "How courteous?" and "How satisfied?"[9] Therefore, measures can be conducted on aspects of extensiveness (i.e., amount of service provided), effectiveness, efficiency, costing (i.e., cost benefit or cost-effectiveness), service quality, satisfaction, or any number of other factors. It is obvious from the large number of reports and studies that measuring performance is a continuous and continuing process, whether it is related to systems measurement or personnel performance.

One continuing challenge among researchers and practitioners is the need to develop a set of representative outcome measures that convey customer expectations from which libraries can choose which ones to use, or modify, for local benchmarking. However, a broad range of methods have been tested in an attempt to prove and substantiate the outcome of information services.[10] It is recognized that performance metrics must be in place, with an infrastructure to collect, filter, analyze, and disseminate them both within and outside the organization. Many groups are working on such activities, particularly the Association of Research Libraries, which, several years ago, began an ARL New Measures Initiative[11] to assess how well libraries meet stakeholder needs and how they use their resources and services. The measures address the issue of impact of the library's resources and services and how this can be evaluated in terms of the difference between the user's expectations and the perception of what is delivered. Quantitative and descriptive statistics are easier to develop and measure than qualitative ones, particularly when

benchmarking is used. Such quantitative statistics are compiled by a large number of organizations.

What is important in all measurement activities is to keep accurate records of what is done so that the process can be monitored on an ongoing basis. If records are not kept, if there is lack of control, and if the output cannot be measured objectively, then it is difficult to assess how much actual performance deviates from the planned performance and to determine a measure of success. A number of research reports prove helpful in this activity. Perhaps the most comprehensive is that developed by the International Organization for Standardization, which specifies a set of 29 indicators grouped in three areas:

1. User satisfaction.
2. Public services, which include general indicators as well as specific indicators on providing documents, retrieving documents, lending documents, document delivery from external sources, inquiry and reference services, information searching, and facilities.
3. Technical services, including indicators in the area of acquiring, processing, and cataloging documents.[12]

Besides feedback, the other type of basic control is prevention, which attempts to predict what will happen by setting parameters. Goal setting in the planning process is a good example of this type of control. Goal setting takes information about past performance and introduces it into decisions about adjustments that are needed for future actions. Such a process is just as important to an ordinary control process as it is to a more complex, automated one.
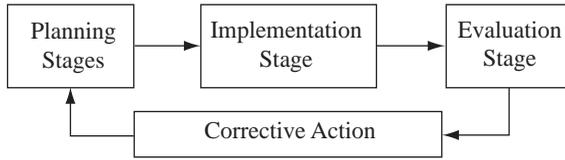
Correcting Deviations

Correcting any deviations from the norm is a vital step in the coordinating process. This correction can be achieved by exercising organizational prerogative, for instance, in the case of personnel, by reassignment or clarification of duties, by additional staffing, by better selection and training of staff, or by some other method of restaffing. Corrections also can be made by adjusting goals, developing new or alternative plans, or altering ways of doing things.

A simplified example of detecting deviations in libraries, which combines elements of goal setting and feedback, is a monthly budget balance sheet that might show, for instance, that by the month of July, three-fourths of the amount budgeted for online access for the year already has been expended and that, unless corrective action is taken, the organization will overrun the budgeted amount in that category well before the end of the calendar year. A decision must be made on how to keep this from happening.

Cybernetics, which has become increasingly important in the control feedback process, studies the interaction of communication and control as fundamental factors in all human activity and now is being applied to many large organizations, including libraries and information centers. Basically, cybernetics is a self-regulating method by which messages that the system sends to itself indicate deviations from the desired course. This may be expressed in a very simplified diagram that shows how the information flow makes possible the self-regulation of the system (see figure 18.1).

Figure 18.1—With Cybernetics, an Organization Can Provide Feedback

```
┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│   Planning   │ ──→  │Implementation│ ──→  │  Evaluation  │
│    Stages    │      │    Stage     │      │    Stage     │
└──────────────┘      └──────────────┘      └──────────────┘
      ↑              ┌──────────────────┐          │
      └───────────── │ Corrective Action│ ←────────┘
                     └──────────────────┘
```
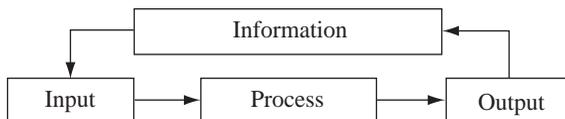
Communication is the most important aspect of a feedback control system because it involves transmitting and receiving messages or information—in this case, data used to make the decisions that control the system's behavior. Again, a simplified diagram illustrates the process (see figure 18.2).

Evaluating Efforts

Evaluation and assessment of services is a complex process that attempts to identify areas needing improvement with an aim toward taking corrective action. It is not a one-time thing or even a sometime thing, but rather an ongoing review of operations. This aspect of controlling is inextricably tied to and, indeed, is a major component in the strategic planning process because it is impossible to evaluate unless it is known what is to be evaluated. How effectively and efficiently a library or information center is meeting the goals and objectives identified in the planning process should be measured through such an evaluation. If the whole process is viewed as a circle, the evaluation step in the decision-making process brings the organization to full circle in its planning for change. There are at least three factors to be considered in evaluation:

1. The input to the service or, more specifically, the application of resources necessary for information services to occur, including staff, materials, space, and equipment. They can be measured in terms of the amount or number of resources involved and their cost. Those are all measures of the input one should consider.

2. The output should be considered in terms of the quantities of output of the services and how that can be cost factored, including price, timeliness, availability, and accessibility, all contributing to the value of the services. Quality of output is of primary concern. Measures of use and nonuse of the services require examining the factors that affect use and nonuse and assessment of the importance and satisfaction with specific attributes of those services.

Figure 18.2—Communication Is Key to a Feedback Control System

```
          ┌────────────────────────────┐
          │        Information          │ ←──────┐
          └────────────────────────────┘         │
      ↓           ┌──────────────┐                │
┌──────────┐      │   Process    │      ┌──────────┐
│  Input   │ ──→  │              │ ──→  │  Output  │
└──────────┘      └──────────────┘      └──────────┘
```

3. The outcomes include such elements as saving time, improving productivity, improving quality of life and work, and enhancing timeliness—adding value. It is the relationship of those measures that begins to illustrate the usefulness and importance of libraries that has some bearing on justifying the budget and resources in the effort to improve both personal and professional lives.

Evaluation requires that several questions will have been answered in the process:

1. Are you now able to make decisions that you wanted to be able to make as a result of your evaluation?
2. Was the primary audience adequately identified and solicited for the results?
3. Was the information needed actually received in the process?
4. Where was that information sought and received, and how?
5. Were resources adequate to get the information, analyze it, and report it?

Those are the same primary questions that will have been identified to begin the process. Evaluation requires careful collection and analysis of that type of data in order to make decisions.

Evaluation can come from a variety of sources. Cost-benefit analysis, budget analysis, performance evaluation, and collection evaluation are examples of techniques used in the evaluation process. Such data provides insight into effectiveness, efficiency, impact, and value of a program, operation, or service.[13] Accountability in libraries has fostered the development of many prescriptive techniques to measure the efficiency of library operations and the effectiveness of library services.

When one thinks of internal controls, mechanical controls come to mind first, including circulation control, automated serials, use of online databases, and the like. These technological controls are only examples of tools that are used to measure library operations. Technology has become an invaluable ubiquitous aid to decision making in all types of library and other information services organizations. It is also being used effectively in establishing models for library operations through decision theory, game theory, graph theory, queuing theory, and simulation exercises, among other applications. Many basic techniques and tools are employed in the control process in the library, particularly as libraries strive for accountability of their operations. These include varying sophisticated tools, including decision support systems and operations research.

❓ What Would You Do?

You have been asked by the library director of a large academic library to head a committee of staff with the responsibility of developing accountability measures for the library. It is important because the president of the university has dictated the need for value in the peripheral areas

of the college's organization—bookstore, computer center, libraries, and so forth—which, according to the board of trustees, seem to be costing disproportionate amounts of budgetary resources. How will you begin to prioritize the kinds of quantitative and qualitative data needed to support arguments for not only continued funding but also for additional resources to meet the goals of information services in the institution?

TOOLS OF COORDINATION

The function of coordinating and controlling so that good decisions can be made requires accurate and timely information for the control and monitoring of specific kinds of data. This process has become heavily dependent upon technology to enhance efficient information gathering. This combination of human expertise within the organization and technology to facilitate its use is what one might identify at the core of discussions about the knowledge management initiative or knowledge networking today. The process of locating, organizing, transferring, and using information and expertise within the organization, made more efficient and effective by the use of technology, fits appropriately in any discussion of tools for decision making. Automated systems have the capacity to crunch enormous amounts of information relating both to input and output of information for decision making in libraries. However, caution always must be exercised in employing some of these tools because, in the hands of amateurs, the quantitative systems and tools frequently produce misleading data or unsubstantiated solutions. In addition, mechanistic formulas for dealing with complex realities are not always appropriate.

Several initiatives can be identified in a library context that lend themselves to adequate measurement tools, and these can prove helpful in meeting goals and objectives as they coordinate and measure performance.

Cost-Benefit Analysis

A cost-benefit evaluation can be conducted to determine whether the potential worth or value of a service is greater than or less than the cost of providing it. In other words, is the service or process justified? Therefore, it is an attempt to identify and express in monetary terms one measure in determining the value. Developing a cost-benefit analysis process need not be an intimidating undertaking. Most people in their daily work lives, in fact, engage in some level of intuitive cost-benefit analysis. In its simplest form, cost-benefit analysis is little more than a formalized approach for identifying and weighing the advantages and drawbacks associated with a decision. In general, cost-benefit analysis provides a useful tool for evaluating the efficiency of a regulation. At its best, it can separate good intentions from good ideas. It is, however, only a tool, and, as with any tool, it can be used effectively or misused. Cost-benefit analysis is flexible and can be adapted to focus on specific functions or aggregated on the costs and benefits of the system as a whole. Some cost-benefit activities appear to have little to do with control—financial reports, status reports, project reports—but they all require some type of monitoring, serving

as an overview of what is being done, how it is being done, and if it is being done efficiently.

One of the most difficult aspects for libraries is placing a monetary figure on the benefit of operations, unlike many other organizations that can calculate benefits for service from the financial charge of that service, which somewhat reflects the value of providing that service. In other words, measuring the benefits that users derive rather than just measuring what libraries do.

But cost-benefit analysis is a set of procedures to measure the merit of actions in monetary terms. The process reduces uncertainty by helping make decisions about the best of options available. It is used as a counterpart to private-sector profitability accounting. The difference is that most public actions to improve public well-being, such as those instituted in libraries, do not have well-established private markets that generate price information on which to judge their value or benefits. "Cost-benefit analysis can be defined as a systematic approach which seeks to:

1. Determine whether or not a particular program or proposal is justified,

2. Rank various alternatives appropriate to a given set of objectives, and

3. Ascertain the optimal course of action to attain these objectives."[14]

Cost-benefit analysis is a form of measurement that considers both direct and indirect costs in the allocation of resources. The technique is used to examine both the current budget allocation process and to ascertain the level of financial support required to establish some specified benefits of both new and existing programs. It requires a statement of the problem, accompanied by estimation of costs and benefits associated with each alternative identified in order to compare them with one another and with the benefits that are sought. The objective is to identify that one alternative that offers the greatest benefits at the lowest costs. However, it must be remembered that sometimes the cost of a service may not outweigh its direct benefit, but there may be an intangible benefit that must be considered as well.[15]

Several factors must be identified in the process, including any external constraints that must be built into the mathematical models as parameters. The process also requires identification of input costs and output benefits. Time-factor consideration requires delineation of costs involving research and development, investment, and operations. There must be recognition that there likely will be a time lag between initiation and achievement of the initial benefits. Because the topic is a detailed one, requiring extensive description, it is only mentioned here to give the reader some idea of its approach. The process has been lauded and lambasted, calling it "an infallible means of reaching the new Utopia to a waste of resources in attempting to measure the un-measurable."[16]

The technique of cost-benefit analysis, simply reviewed, involves choosing from alternatives when measurement in monetary or other specific measures may not be enough or even possible. Whenever possible, however, some specific measures should be established. For instance, if the objective

is the improvement of referral service at the information desk, effectiveness can be measured by the number of in-person, telephone, or online inquiries answered or unanswered as well as patrons' judgment of staff and satisfaction with the service. As the term suggests, cost-benefit analysis is used to identify not only the cost of a program but also the benefits of the various alternatives that must be considered. The emphasis of cost-effectiveness is on output; each alternative is weighed in terms of effectiveness or costs against the objective that has been set. In some cases, cost models can be developed to show cost estimates for each alternative, or effectiveness models can be developed to show relationships between the alternatives and their effectiveness. Cost-benefit analysis is often confused with cost-effectiveness, but there is a subtle difference.[17] Cost-benefit analysis is concerned with the cost, cost-effectiveness, and value. Cost-benefit analysis asks, "Which is the best (least expensive or efficient) way to perform an operation?" whereas cost-effectiveness asks, "Because this is what the service costs, is it worth it (is it effective)?" which is a measure of quality. The process of cost-benefits analysis has been greatly enhanced by the development of software packages.

Benchmarking

Benchmarking, in its early stages of development, was more commonly identified as a Total Quality Management (TQM) tool used to measure and compare the work processes in one's organization with those in other organizations. It has since come into its own in libraries as they recognize the benefits of using it in measurement of activities. A benchmark is a reference point or standard against which progress or achievements can be assessed.

Benchmarking is information driven and requires libraries to examine their work processes and functions and to measure their productivity against that of others. By monitoring others, they can be encouraged to enhance their own performance by adopting, or adapting, the best practices of others. Benchmarking is an excellent tool to determine how effectively, efficiently, and economically an institution rates against others in its peer group.

The goal of benchmarking is to increase performance by:

1. Identifying libraries with best practices as partners.
2. Measuring and comparing a selected work process against others in the peer group.
3. Emulating, or adapting, the identified best practices for the local library or information center situation.

Of course best practices are not stagnant and are always evolving; therefore, benchmarking is a continuous adjustment process. As a tool, it requires an organization to focus efforts on improving the effectiveness and efficiency of delivery of products and services. Benefits of benchmarking include the possibility of demonstrating the value of a library system and services in numerical terms; in addition, it allows comparison with libraries in the peer

group. In many cases a benchmarking study is used to prevent a decrease in services, including financial and systems initiatives. The desired outcomes of benchmarking are efficiency and effectiveness—reduction of costs and improvement in customer service. Several types of benchmarking are being used in libraries: internal benchmarking used to measure similar activities performed by different units; functional benchmarking comparing an organization's practices with those identified as leaders within the same service area; generic benchmarking, which compares an organization's functions or practices that cross different types of organizations; and competitive benchmarking, which compares a unit's performance of a service or process with that of a competitor.[18] Examples can be found in several Web sites, including those of the Association of Research Libraries and the Special Libraries Association.[19]

Five stages have been proposed in the benchmarking process:

1. Measuring services and selecting the aspects to be benchmarked.
2. Identifying benchmarking partners, because the goals, aims, and objectives must be compatible.
3. Identifying the best practice, to be discussed later, because the best practice varies from one group to another.
4. Changing procedures and features of services based upon those best practices identified.
5. Measuring the new approaches to service to determine the impact.[20]

Program Evaluation and Review Techniques (PERT)

Program Evaluation and Review Techniques (PERT) is a commonsense tool that helps remind people of the preparation work needed before an event and helps them check if the tasks will be completed on schedule. PERT is a technique of control in the planning process that is highly applicable to library operations. PERT originally was developed by the U.S. Navy's Special Projects. A method of planning and scheduling work, PERT is sometimes called the Critical Path Method (CPM). It involves identifying all of the key activities in a particular project, devising the sequence of activities and arranging them in a flow diagram, and assigning duration of time for the performance of each phase of the work to be done. This technique consists of enumerating events whose completion can be measured. Most likely times are then calculated for the accomplishment of each event, so that one can see how long it would take for the progression of events to be completed. This model-building network approach is most effectively used for major projects that are one-time events. An example would be the opening of a new library. Activities can be plotted to allow the librarian to determine the most expeditious route—or critical path—that can be taken to carry out the event. As with other techniques discussed, in PERT one must be able to state objectives, then activities must be enumerated and estimates must be given for the time required for each of these activities. The abbreviated, two-path diagram in figure 18.3 illustrates the concept.

Figure 18.3—PERT Diagram Shows the Planned Schedule of a Task, in Graphic Format, of a Two-Path Approach
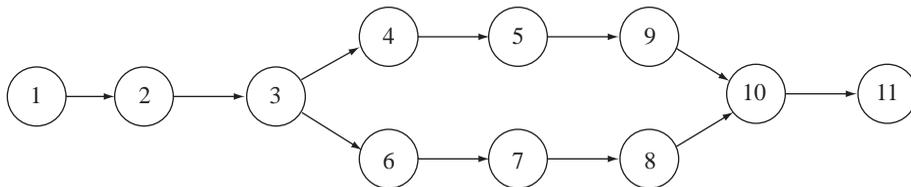
The figure suggests that there are two paths to be taken—say, from the time the idea of a new library is formulated until the building is ready for occupancy (O represents events and → represents activities). Times would be assigned for each activity, say, three weeks between events 4 and 5, one week between 6 and 7. As illustrated, either path 1–2–3–4–5–9–10–11 or path 1–2–3–6–7–8–10–11 can be taken. If time is of the essence, the shorter route might be more desirable. Time is the key element in the critical path schedule. Perhaps a bit more detail, illustrating the CPM concept, can demonstrate the critical issue of time (see figure 18.4). The time required to complete the series is the greatest sum of the combined time requirements. Of the four paths illustrated (1–2–5–8; 1–3–5–8; 1–4–6–8; and 1–2–7–8), the longest path, with work going forth on all four paths simultaneously, is 1–2–7–8. This path takes 5 weeks to complete and is the critical path that controls the schedule, more or less, for the whole project.

The PERT/CPM technique allows one to analyze a project in depth before it is initiated. This not only gives the decision maker an idea of the time frame involved but also aids in identifying potential weaknesses. The biggest disadvantage of PERT is its overemphasis on time at the expense of more detailed attention to cost. This disadvantage has led to the development of PERT/COST, which introduces the cost factor into the process. When the system to be studied is complex and when a number of events are involved, it becomes very expensive to establish a cost for each event. PERT is used mainly in industry, but some library systems have explored its value in the planning process, particularly when the process is a complex and lengthy one.

Figure 18.4—A Four-Path PERT Diagram Can Be Used to Illustrate the Critical Paths of Complex, Multipart Projects
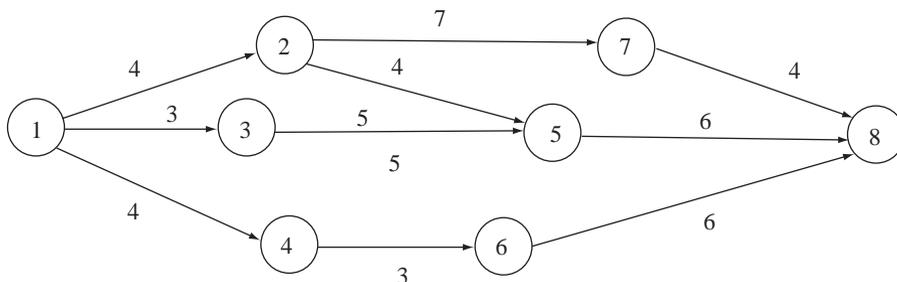
This brief discussion only touches upon the importance or potential of mathematical or statistical controls and does not even begin to present all of their variations. Volumes have been written on each of the topics; interested readers should consult the appropriate headings in the library literature and/ or online for a fuller discussion. The possibility of using mathematical or statistical control techniques becomes greater. Expert systems have been developed to monitor performance and are being widely applied in problem-solving activities of information services.

Balanced Scorecard

The Balanced Scorecard process has been adopted by some libraries to integrate financial and nonfinancial measures as well as internal and external performance measures. With a vision in place, the library can decide what it will benchmark and what performance it will measure. Key to the balanced scorecard approach is linking the goals to specific decisions regarding resource allocation. It is now a simple instrument rather than one element of a total planning system.[21] The initial idea was to connect the traditional financial evaluation of an organization with measures concerning customer satisfaction, internal processes, and the ability to innovate.[22] It was built upon some concepts of previously developed management ideas such as TQM, including customer-defined quality, continuous improvement, employee empowerment, and, primarily, measurement-based management and feedback. Performance improvement involves the creation and use of performance measures or indicators, those being measurable characteristics of products, services, processes, and operations. The Balanced Scorecard is a survey instrument that focuses upon a chosen number of measurements identified in a strategic plan process in order to measure the organizational performance. It proposes that those measures or indicators can be selected to best represent the factors that lead to improved customer, operational, and financial performance.

The system consists of the processes:

1. Translating the vision into operational goals.
2. Communicating the vision and link it to individual performance.
3. Develop a service plan.
4. Provide feedback and adjust accordingly.

In other words, identify the most important data elements, those being the most crucial in the mission of the library, and tally them as part of an overall index or scorecard. It allows a library to concentrate on a small number of measures. Most evaluations in this process fall into four areas: users, finance, internal process, and learning and the future. Typically, each of those measures has one or more strategic objectives, and four to eight measurements or metrics are devised for each category. Each metric also has a specific target score. This process provides a quick analysis of the organization's position in relation to its stated objectives and outcomes. At the end of the measurement period, there is a demonstrated score to indicate which measures have met their targets.

LibQUAL+

LibQUAL+[23] is one measurement activity that has been developed to solicit, track, understand, and act upon users' opinions of service quality.[24] It has emerged as both a process and a tool that enables institutions to address service quality gaps between their expectations and the perceived service delivery program. It is an internationally recognized Web-delivered survey that now includes hundreds of libraries of all sizes throughout the world and is pioneering the use of large-scale, Web-based survey applications in a digital library environment.

It is a tool that attempts to measure library users' perceptions of service quality and identifies gaps between desired, perceived, and minimum expectations of service.[25] The survey instrument is designed to be useful to the library administration on several levels: identifying deficits in service performance at an individual library, allowing comparisons with cohort libraries from multiple perspectives, identifying best practices, and responding to pressures for accountability. Basically, it allows the previously mentioned benchmarking to be performed against other institutions as well as obtaining feedback from the institution's own users. The goals of LibQUAL+ are to:

1. Foster a culture of excellence in providing library service.
2. Help libraries better understand user perceptions of library service quality.
3. Collect and interpret library user feedback systematically over time.
4. Provide libraries with comparable assessment information from peer institutions.
5. Identify best practices in library service.
6. Enhance library staff members' analytical skills for interpreting and acting on data.

The LibQUAL+ questions measure customer perceptions of library service across four dimensions:

1. **Affect of service** (nine items): the human side of the enterprise, encompassing traits of empathy, accessibility, and personal competence (e.g., "willingness to help users").
2. **Personal control** (six items): the extent to which users are able to navigate and control the information universe that is provided (e.g., "Web site enabling me to locate information on my own").
3. **Access to information** (five items): an assessment of the adequacy of the collections themselves and the ability to access needed information on a timely basis regardless of the location of the user or the medium of the resource in question (e.g., "comprehensive collections" and "convenient business hours").
4. **Library as place** (five items): comprising, variously, according to the perspective of the user, utilitarian space for study and collaboration, a sanctuary for contemplation and reflection, or an affirmation of the primacy of the life of the mind in university priorities (e.g., "a haven for quiet and solitude").[26]

Along the lines of LibQUAL+ is the ISO 11620, a recently amended international standard on library performance indicators. It specifies a set of 29 indicators grouped in the following areas: (1) user satisfaction; (2) public services, which includes general indicators as well as specific indicators on providing documents, retrieving documents, lending documents, document delivery from external sources, inquiry and reference services, information searching, and facilities; and (3) technical services, including indicators in the area of acquiring, processing, and cataloging documents. Notable points in this proposed standard are its initial emphasis on user satisfaction; its inclusion of cost-effectiveness indicators; its clear and distinct way of describing each indicator, accompanied by suggestions regarding the methodology to be used in collecting the data; and a description indicating how to most accurately interpret each indicator.[27] Work is underway in the area of performance indicators for the electronic library.

Management Information Systems (MIS)

Over the years, several other tools and techniques have been used by libraries to measure the output of services.[28] Such a system, usually consisting of people, procedures, processes, and a data bank, most oftentimes computerized, routinely gathers quantitative and qualitative information on predetermined indicators to measure program progress and impact.

These include techniques relating to operations control. Among the first to be developed was Management Information System (MIS), a system developed to gather internal data, summarize it, and organize it for decision making in the control process. Its biggest failing was that it did not adequately take into account external intelligence.

Management information systems, in general, can be viewed as ways of collecting data to improve efficiency and effectiveness. Well-ordered management information systems can be enhanced through control and evaluation techniques and tools. These include Program Evaluation Review Technique (PERT), the Gantt Chart, On-Line Analytical Processing (OLAP), and the Critical Path Method (CPM). Typically, the systems involve financial information, personnel information, performance information, and user information, all related to the feedback aspect of control. Some of these tools have received and continue to receive criticism over the years from those who believe that management information systems represent simply a process, sometimes with adequate reference to strategic planning, operations planning, or budgets, and that their objectives have no relationship to other developments.

There is no doubt that to be effective, any kind of management information system must be reviewed and, if adopted, have a direct relationship to what is desired as far as information retrieval and outcome for library operations is concerned. Technology has made it easier to standardize procedures and to apply mechanical methods to measure them. Newer techniques, such as expert systems, now offer greater opportunities to manage libraries and have capitalized on the impact that technology provides. Automated systems have made the process of generating process-related statistical data easier.

The primary issue for many information services organizations remains one of identifying the appropriate data and how to utilize it.

Decision Support Systems (DSS)

The Decision Support System (DSS) is an interactive software-based system that is useful for decision makers in the process of compiling useful information from raw data, documents, personal knowledge, and/or business models to identify and solve problems and make decisions. It is an organized method of providing past, present, and projection information related to internal operations and external operations, the latter being related to the environmental scanning process mentioned under the topic of strategic planning. This implies "a structured organized approach with the assistance of some automated mechanism."[29] DSS supports the planning, control, and operational functions of an organization by furnishing information in the proper time frame to assist in the decision-making process. DSS covers a variety of systems, tools, and technologies that incorporate both data and models and that are now being transposed to create a knowledge-based system as state of the art. Newer terms that focus on certain types of decisions, including Executive Support Systems, Executive Information Systems, Intelligent Information Systems, Organizational Support Systems, Controlling Information Systems, and the like, are now prominent. The concept takes advantage of the continuous development in the database management and modeling arena to offer software that supports computerized decision making. It is more interactive in that it can respond to messages and can project alternative approaches upon which decisions can be made. It can simulate situations and project outcomes. This computer-assisted analysis is an effective tool for financial planning, among other activities. It allows for testing assumptions, factoring risks, and exploring alternatives. It is particularly useful when managers are presented with problems that have more than one solution, thereby enhancing the manager's decision-making options, for instance, through time-and-motion study.

Time-and-Motion Studies

Motion studies enable a library system to record in flow chart form the present method of doing things, to analyze the method's effectiveness, and, from this analysis, to improve the method. The new method of doing things can then be timed to report the performance standard. Time studies complement motion studies in determining performance standards. A third element in this quantifying process is cost; that is, attaching a monetary figure to the activities of an individual. Both time and cost vary with the level of expertise of the individual performing the task and the institution in which the work is taking place. Many time-and-motion studies have been and are being done in libraries, particularly relating to routine tasks, such as shelving books, inputting data into online files, checking in periodicals, or preparing items for the bindery.

Operations Research

Two terms that are closely related and often used interchangeably are *operations research* and *systems analysis.* Actually, the latter emerges from the former. Operations research (OR) today is largely identified with specific techniques, such as linear programming, queuing theory analysis, dynamic programming, statistical models, Monte Carlo (randomizing) methods, gaming and game theory, and other computer-simulation models. It attempts to look at and improve the whole organization or system, not just one part of it. It is the scientific methods to study the functions of an organization so as to develop better methods of planning and controlling changes in the organization. "It can be viewed as a branch of management, engineering or science. As part of the field of management, its purpose is to assist decision makers in choosing preferred future courses of action by systematically identifying and examining the alternatives which are available to the manager, and by predicting the possible outcomes for such actions."[30] For libraries, it means making objectives explicit, deriving suitable measures of the extent of meeting them, developing simple quantitative relations between input and output, and identifying constraints that one should strive to remove.[31] It occupies the interest of a number of different groups, particularly statisticians and mathematicians.

From the late 1960s to the present, applied operations research has come into its own in the library decision-making process. This is primarily because in recent years decision making in general has emphasized the mathematical and statistical approach rather than a judgment-based approach. The emphasis of the mathematical approach was facilitated primarily by the application of scientific methods and now technological development, the major impact coming with the development of the computer, which was necessary for the manipulation of complex data. One use to which computers have been put is modeling organizations or systems. Conceptual models used for decision making are simply computer-based attempts at simulating reality. They are powerful means of testing various alternatives without changing the commitments involved in a typical decision. The primary approach of operations research consists of a broad view of the problem by the whole organization. This is succeeded by a team initiative, using personnel with different backgrounds from different departments, with the team addressing the economic-technical aspects of the total system. The key components to the process, then, are application of the scientific method; using a systems approach to problem solving; and employing mathematical, probability, and statistical techniques and computer modeling. Statistical analysis is made easier with the technologies available today: software systems for modeling. However, some types of statistical analysis require a different approach to gathering data that can then be analyzed electronically.

In terms of control, the major contribution of operations research has been in constructing models that can be used in the decision-making process. To accomplish this, a basic knowledge of systems analysis is necessary. Again, the important first step, as in most techniques, is to identify objectives and then to look at variables that might influence the objectives. These are expressed

mathematically to determine the best alternative in terms of the objectives set. The system currently in use is described. Based upon this analysis, a series of mathematical models is developed to describe the interrelationships within the organization. Data are then collected to measure the system, or if data are not available, assumptions or speculations are made. This information provides the basis for a working model for a new system. With this information in hand, the librarian is able to make decisions based on the alternatives presented. The analytical statistical technique and the techniques of probability theory are employed.

It has been pointed out that the use of operations research in libraries is based on the application of the scientific approach to practical problems: "It normally operates in four distinctive stages:

1. Description of the system being considered, especially by means of mathematical models and computer simulations;

2. Measurement, using objective data wherever these can be obtained;

3. Evaluation, the presentation of relevant information to the system manager (here the librarian) to aid in making decisions between different courses of action;

4. Operational control, assisting the development of ways and means of achieving the objectives aimed for over a period of time."[32]

Because of the technique's complexity and its use of mathematics, as well as the costs of modeling, librarians have not yet universally applied OR to improving managerial control.

Also, there are limits to this approach. The quantitative method can be no better than the assumptions and estimates used in it. Its greatest limitation to use in libraries is that quantitative analysis is not adaptable to all situations. Some variables in libraries are very difficult to quantify, yet to achieve proper quantitative analysis, all variables must be assigned quantitative weights either through amassed data or through estimates. Therefore, a great deal of judgment is required, first to know when to use the quantitative method and then to know how to estimate costs of activities. In addition, quantitative analysis can become very elaborate and costly. One criticism of the technique is that it does not emphasize human factors enough, because such factors are difficult to model mathematically. Also, this method demands some knowledge of mathematics and statistical concepts, and these are areas in which librarians are thought to be at their weakest; we have relied heavily on nonlibrarians to provide this expertise. Finally, it should be remembered that use of quantitative tools concerns only one phase of the decision-making process. It is a kind of management information that is infrequently used to identify the problem or to develop alternatives.

Knowledge Management

Just as MIS was reinvented in the form of DSS, so has the concept of information resource management been subsumed under the concept of knowledge

management, a developing system that attempts to capture the knowledge and expertise of human capital as well as documents, repositories, routines, processes, practices, and norms within and flowing into the organization by creating a computerized system to capture both the implicit and explicit knowledge within the organization. Knowledge management is concerned with developing organizations in such a manner as to derive knowledge from information, Such a systematic process of transferring knowledge within the organization is made easier by technologies, using DSS, statistical analysis software, artificial intelligence, and other developing tools. The question of systematically acquiring outside knowledge, with benchmarking being a good example for identifying best practices, is incorporated in the process. The elements of knowledge management systems include accessing, evaluating, managing, organizing, filtering, and distributing knowledge.

Try This!

Select one service activity that you feel should be a priority objective in an academic library. Identify one tool or technique that can be used to measure the success in meeting that priority goal. It might relate to both quantitative and qualitative measures. Defend the selection as the best measurement of that service.

MONITORING PROGRAMS FOR RESULTS AND ACCOUNTABILITY

Monitoring is a continuous management function aimed primarily at providing managers with regular feedback and early indications of progress or lack thereof in the achievement of intended results within the organization.

Monitoring

Monitoring tracks the actual performance against what was planned or expected according to predetermined standards. It is that portion of a project or program that involves collecting and analyzing data on processes and results and recommending corrective measures.

The process of monitoring and feedback is the best way of expressing accountability in library and information services in both qualitative and quantitative terms. It provides checks and balances for the service goal. Based on evaluation as part of the reporting mechanism, decision makers decide whether changes are desirable, either in the system or in the strategic goals of the organization. Such reporting mechanisms are not only important to evaluate results and to correct deviations but also as marketing strategies intended for funding authorities, customers, and all staff within the organization.

Monitoring means quality assurance of the programs that have been insti-tuted. Communication tools, which have been used in libraries and informa-tion centers that measure performance, include personal observation, focus groups, meetings, e-mail, statistical data, surveys, interviews, oral reports, and written print-on-paper and electronically generated reports. Other publi-cations help facilitate the process of reporting results. When one searches the Internet, it is obvious that the Web is also being used to report to the world, not just to constituents, on activities and on outcomes. This reporting activity is conducted in a number of ways, internally and externally. Sometimes it is on a monthly basis to review results; sometimes it is carried out internally on a daily basis by keeping a scorecard of projects and progress toward their goal accomplishment. Other times, for various audiences, reviews and reports are presented on a less frequent basis. Occasionally, such reports are required at specific intervals, for accrediting or other control purposes, by outside agen-cies or organizations.

Techniques such as storyboarding, in which goals and objectives are com-pared with performance to date to identify progress, are sometimes used. Most important, data should be reported and performance explained internally, and performance information should be consolidated and reporting mechanisms consistent across the organization. Results should be shared not only inter-nally but also externally with customers and stakeholders through annual reports. Basically, data from the several techniques available fall into one of three primary categories:

1. Statistics (counting inputs, staff, materials, services).
2. Performance indicators ("How well are we doing?").
3. Economic value ("How much are we worth, in monetary terms?").

In the reporting process, it is important to recognize that there are strong relationships between resource allocation, strategic planning, and perfor-mance measurement; each builds upon the other and creates a circle of ser-vice. The budget is allocated according to primary goals and objectives that have been identified in the strategic plan, which should have identified some of the measure to be used in terms of output. Because the library is not a static organization, evaluation must be made from that perspective. As the goals and needs of society change, so the library or information center must respond. Therefore, past measures may no longer be important, and new ones may need to be found. A good example is in the area of "access" or "ownership" of materials as a criterion of quality.

Accountability

All types of library information centers must demonstrate a value of service or value-added aspect to the larger organization of which they are a part and to their constituencies. Through accountability, the library and information center is, more than ever before, expected to evaluate the institution's perfor-mance to ensure that the human and material resources are effectively and

efficiently employed toward achieving its goals and those of the larger institution. In the past, some libraries relied on the public-good view of library services. This is no longer adequate in the current competitive environment.

Accountability measures are intended to provide quality assurance and timeliness of program performance. This requires managing for results through clearly stated expectations and the reporting of results. All three elements also are required to establish clear and effective measure of accountability. It is designed to promote efficiency in monitoring and evaluating performance to demonstrate its added value and effectiveness in improving service. It requires determination of success and understanding of the responsibilities for achieving organizational goals. Accountability is typically a key success factor. Establishing viable performance measures is critical for organizations; making those measures work is even more important. As stated in a previous chapter, performance measurement systems are linked to strategic and operational planning. Employees and managers should understand and work toward the desired outcomes that are at the core of their organization's vision. One motto might be "Focus on the goal of 'customer satisfaction,' measure the end results, and don't focus on the measurements per se."[33]

CONCLUSION

Coordinating functions are created to facilitate the achievement of goals and objectives in libraries and information centers. Those standard-setting activities and evaluation and measurement techniques provide vital feedback information to management and staff as activities are carried out to achieve the mission. Some tools and techniques for developing services are sophisticated yet have great application for information services. They are important parts of the process of accountability and reporting on success.

NOTES

1. *Standards for Libraries in Higher Education* (Chicago: American Library Association, ACRL, 2004).

2. Institute of Museum and Library Services, Washington, D.C., *Perspectives on Outcome Based Evaluation for Libraries and Museums,* 20, http://www.imls.gov/pubs/pdf/pubobe.pdf.

3. Martha Kyrillidou, "From Input and Output Measures to Quality and Outcome Measures, or, from the User in the Life of the Library to the Library in the Life of the User," *Journal of Academic Librarianship* 28, no. 1 (2003): 42.

4. Rowena Cullen, "Does Performance Measurement Improve Organisational Effectiveness? A Postmodern Analysis," *Performance Measurement and Metrics* 1, no. 1 (August 1999): 12.

5. Peter F. Drucker, "Controls, Control and Management," in *Managerial Controls: New Directions in Basic Research,* ed. C. P. Bonini, R. K. Jaedicke, and H. M. Wanger (New York: McGraw-Hill, 1964), 286.

6. George Schreyogg and Horst Steinman, "Strategic Control: A New Perspective," *Academy of Management Review* 12 (January 1987): 91.

7. American Library Association, Reference and User Services Division, "Guidelines for Information Services" (July 2000), http://www.ala.org/ala/rusa/rusaprotools/referenceguide/guidelinesinformation.htm.

8. *Proceedings of the Northumbria International Conference on Performance Measurement in Libraries and Information Services.* 1st ed.–6th ed. (Newcastle, U.K.: University of Northumbria, Information North, 1995–2005).

9. Peter Hernon and Ellen Altman, *Assessing Service Quality: Satisfying the Expectations of Library Customers* (Chicago: American Library Association, 1998), 51–53.

10. Roswitha Poll, "Impact/Outcome Measures for Libraries," LIBER Quarterly (2003), http://webdoc.gwdg.de/edoc/aw/liber/lq-3–03/329–342.pdf.

11. Association of Research Libraries, *ARL New Measures Initiative* (ARL, Washington, DC: Association of Research Libraries, http://www.arl.org/stats/initiatives/.

12. International Organization for Standardization, *ISO 11620, Information and Documentation: Library Performance Indicators* (Geneva, Switzerland: International Organization for Standardization, 1998, amended 2003).

13. Peter Hernon and Ellen Altman, *Service Quality in Academic Libraries* (Norwood, NJ: Ablex, 1996), 15.

14. Alan Walter Steiss, *Strategic Management and Organizational Decision Making* (Lexington, MA: Lexington Books, 1985), 117.

15. St. Louis Public Library, "Development of a Portable Cost Benefit Methodology for Urban Libraries" (n.d.), http://www.slpl.lib.mo.us/libsrc/dev.htm.

16. A. R. Prest and R. Turvey, "Cost Benefit Analysis: A Survey," *The Economic Journal* 85 (March 1965): 583.

17. F. Wilfred Lancaster, "The Evaluation of Library and Information Services," in *Evaluation and Scientific Management of Libraries and Information Centers,* ed. F. W. Lancaster and C. W. Cleverdon (Leyden, Netherlands: Noordhoff, 1977), 4.

18. T. M. Peischel, "Benchmarking: A Process for Improvement," *Library Administration and Management* 9 (Spring 1995): 99–101.

19. http://www.arl.org/stats/newmeas/index.html benchmarking; Special Libraries Association, "Benchmarking: http://units.sla.org/division/dmil/mlw97/gohlke/

20. Claire Creaser, "Performance Measurement and Benchmarking for School Library Services," *Journal of Librarianship and Information Science* 33, no. 3 (2001): 126–32.

21. Robert S. Kaplan and David P. Norton, *Balance Scorecard: Translating Strategy into Action* (Boston: Harvard Business School Press, 1996).

22. Ibid.

23. Association of Research Librarians, "Statistics and Measurement" (2007), http://www.arl.org/stats/.

24. LibQUAL+ (2007), http://www.libqual.org/.

25. Colleen Cook, Fred Heath, and Bruce Thompson, *Users' Hierarchical Perspectives on Library Service Quality: A "LibQUAL+TM" Study* (Washington, DC: Association of Research Librarians, 2001).

26. Fred Heath, Martha Kyrillidou, Duane Webster, Sayeed Choudhury, Ben Hobbs, Mark Lorie, and Nicholas Flores, "Emerging Tools for Evaluating Digital Library Services: Conceptual Adaptations of LibQUAL+ and CAPM," *Journal of Digital Information* 4, no. 2 (June 2003), http://jodi.tamu.edu/Articles/v04/i02/Heath/#top.

27. http://www.niso.org/international/SC8/sc8rpt.html.

28. http://web.syr.edu/~jryan/infopro/stats.htm.

29. Michael E. D. Koenig, *Information Driven Management Concepts and Themes: A Toolkit for Librarians* (IFLA pub. no. 86) (New Providence, NJ: Bowker-Saur, 1998), 49.

30. Ferdinand F. Leimkuhler, "Operations Research and Systems Analysis," in *Evaluation and Scientific Management of Libraries and Information Centers,* ed. F. W. Lancaster and C. W. Cleverdon (Leyden, Netherlands: Noordhoff, 1977), 131.

31. M. Elton and Brian Vicker, "The Scope of Operational Research in the Library and Information Field," *ASLIB Proceedings* 25 (1973): 319.

32. A. Graham Mackenzie and Michael K. Buckland, "Operations Research," in *British Librarianship and Information Science, 1966–1970* (London: Library Association, 1972), 24.

33. Al Gore, "Serving the American Public: Best Practices in Performance Measurement," *National Performance Review* (1997), http://govinfo.library.unt.edu/npr/library/papers/benchmrk/nprbook.html#executie.