

**PLANNING AND MANAGING
FORESTRY RESEARCH:
A SELF-LEARNING COURSE**

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**MODULE 8
PROVIDING SUPPORT FUNCTIONS**

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MODULE 8

PROVIDING SUPPORT FUNCTIONS

Introduction to the Module

Scientists cannot "do" research without depending upon their organization for many kinds of support. We created this module to help you to better understand how research organizations support their scientists and researchers in their work. In this module, we'll show you how to systematically review your organization's current service support system, including both scientific and administrative services. By working through the unit, you should become better at identifying and meeting the service needs of your researchers. We'll try to show you how to balance all of these parts of the research organization support system (no easy feat!) so that the organization functions smoothly and efficiently.

We know that this module contains two long study units. But since these issues are critical to successful management of forestry research, we hope you'll agree that it's well worth your effort to master. Good luck!

List of Study Units covered in this module

- Unit 8.1. Providing scientific support services
- Unit 8.2. Providing administrative services

Initial Skill and Knowledge Assessment

Module 8 - Providing Support Functions

If you would like to find out how much you improve your skills and knowledge by studying this module, we suggest that you complete the exercise on the next page **before** you begin this module. This will establish your current level of skills and knowledge about the topics covered in this module. At the end of the module there is an identical skill and knowledge assessment form which you can complete once you have finished the module. By completing and comparing the before and after assessments, you can determine the extent to which you have improved your skills and knowledge.

Below are listed a number of skill and knowledge statements derived from the objectives of the study units in this module. These are identical to those listed in Study Unit 0.3 - Self-assessment of Training Needs, which you may have completed initially to guide your course of study. *Please read each statement carefully and indicate with a checkmark the level that best describes your current skill or knowledge, from 1 to 5, using the following descriptions:*

- 1 I cannot perform this skill, or I have not been exposed to the information.
- 2 I cannot perform this skill, but have observed the skill or have been exposed to the information.
- 3 I can perform the skill or express the knowledge with assistance from others.
- 4 I can perform the skill or express the knowledge without assistance from others.
- 5 I can perform the skill or express the knowledge well enough to instruct others.

Skill or Knowledge Statement	Your Level of Skill or Knowledge				
	1	2	3	4	5
a) Identify and assess the needs for various scientific support services within the organization or unit you manage.					
b) Assess the capacity of your organization or unit to provide the scientific support services needed, and identify alternative sources of such services.					
c) Describe the various administrative services provided by your research organization, and identify the personnel who provide those services.					
d) Describe the functions of the various administrative services within your organization.					

Study Unit 8.1

Providing Scientific Support Services

Managers of forestry research recognize that science cannot be done in a vacuum. No scientist has the complete range of skills and knowledge necessary to independently pursue a comprehensive research program. Thus, research organizations have to provide scientists with a variety of support services, including access to the scientific literature, and statistical, computer and publication expertise. In this unit, we'll help you to systematically review how your organization currently provides scientific support services. You'll also identify weaknesses in the system, and generate realistic improvements in your organization's approach.

Objectives

When you have completed this study unit you should be better able to:

- identify and assess the needs for various scientific support services within the organization or unit you manage;
- assess the capacity of your organization or unit to provide the scientific support services needed, and identify alternative sources of such services; and
- describe ways to improve the scientific support services provided by your organization.

Providing Scientific Support Services

In order to conduct effective research, scientists in a forestry research organization need access to a broad range of scientific and technical information, and to special expertise in statistics and computer technologies. No scientist has all of the scientific and technical knowledge and skills required to fully carry out their research responsibilities. In order to facilitate their research programs, research managers must identify and plan for meeting the needs for such specialized information and expertise. Most research organizations meet these needs by establishing special service groups within the organization. Such groups are referred to as scientific support services, to distinguish them from administrative support services (discussed in study unit 8.2).

The Importance and Functions of Scientific Support Services

Scientific support services exist to support the research program of the organization. Although they may contribute to other goals of the organization, their primary goal is to facilitate and improve the quality of research by providing information and expertise to scientists and others in the organization. Forestry research organizations vary in their need for scientific support services, in the amount and quality they provide, and in the way in which the services are provided. However, most forestry research organizations find it necessary to provide, in one way or another, the following scientific support services:

- information;
- statistical;
- computing;
- publication; and
- special research support.

Research organizations need specialists to help scientists take full advantage of the available scientific information and literature, statistical methodologies, and rapidly changing computer technologies. In small organizations, statistical or computer support services may be provided by individual scientists or others within the organization who are particularly adept or have had special training in statistics or computers. But as the demand for such help increases, those scientists who provide the help may find themselves devoting a large percentage of their time to assisting others in their research. In larger organizations, it may be necessary to designate special people or set up small groups to provide the necessary assistance to scientists.

Although the primary function of scientific support services is to provide information and expertise to scientists when needed, some research support services also act as quality control groups for the organization. For example, statistical service personnel may

provide a general quality control over the scientific work of the research organization by reviewing study plans, research reports, and publication manuscripts for their statistical soundness. Publication groups may edit manuscripts and oversee peer review of publications to assure that all scientific publications are well-written and scientifically sound.

Conflicts can arise when support service groups, such as computer services, provide services to both research scientists and to research administrators. Such groups become part scientific and part administrative support. Because research support services groups are often under the direction of research administrators, top priority often is given to meeting the demands of research administration; meeting the needs of research scientists becomes a secondary priority. In practice, it is necessary to achieve a proper balance between research and administration when conflicts in demands for scientific support services arise. Clear policies regarding work priorities must be established and communicated to the various research support groups.

The following sections discuss some of the key scientific support services commonly provided by forestry research organizations.

Information Services

In order to play an effective role in science, forestry researchers must have convenient access to information about previous and current research that may be relevant to their work, scientific technologies that may be relevant to their own research, and technologies that are being or could be used in practice by the clients for their applied research. The acquisition, storage, and retrieval of scientific and technical literature is costly and time-consuming. Although many scientists maintain small collections of those publications of immediate interest to their work, for the most part they must depend upon more centralized libraries and other means of accessing information to fill their needs. Providing scientists with some means to access the world's scientific and technical literature is an important function of research management. This can be done in several ways, including: (1) relying upon individual scientists to obtain the information they need by whatever means is available; (2) providing centralized library facilities and services; and (3) providing access to computer-based electronic information networks.

Access to information by individual scientists

Scientists who need to keep abreast of new developments in particular fields of science can do so in many ways. Assuming no funding, time, or other constraints, they can:

- subscribe to or obtain access to a few key journals;
- purchase or obtain access to key books periodically;
- subscribe to or obtain access to abstract journals and/or journals such as *Current*

Contents, which reproduce title pages of key scientific journals;

- write for reprints from authors of articles of interest;
- get on the mailing lists (often free) of research networks to get newsletters, which often report on new literature;
- correspond with other scientists to exchange information;
- visit other scientists in other research facilities to find out about the latest developments;
- visit library facilities in universities and/or other research organizations;
- attend scientific conferences, symposia, workshops, and other specialized meetings on topics of particular research interest; and
- utilize computers to access information databases.

These suggest some of the alternatives that could be used by scientists to locate scientific information in the absence of a library and/or a librarian at the research facility. Most research scientists maintain some sort of reference collection of books, pamphlets, and other materials directly related to their research and utilize several other options to access the scientific and technical literature. Research managers could provide funds to support some of the above activities in place of, or in addition to, providing centralized library facilities and services at a research installation.

Centralized library facilities and services

The world literature is expanding rapidly in every area of science. Research related to forestry is being conducted by many disciplines outside of forestry, and is being reported in the literature outside of traditional forestry outlets. It is becoming increasingly difficult to locate literature that is relevant to the various fields of forestry research, particularly those interdisciplinary fields such as agroforestry and social forestry. To locate and obtain the increasingly widespread literature relevant to forestry, forestry researchers can use the help of professional librarians who are especially knowledgeable about the literature related to forestry.

With the proliferation of scientific journals, books, and other sources of information, most forestry research budgets cannot provide individual scientists with enough funds to meet all of their information needs directly. To conserve funds and better meet the specialized needs for information, some organizations support a centralized information service center, such as a library. The rising cost of acquiring books and journal subscriptions suggests the need to have fewer but more comprehensive libraries that can afford to maintain a more complete collection of literature relevant to the research programs of

participating research institutions. Scientists (and research programs) can benefit from having access to such enhanced collections of information.

Library services within a research organization could be met in several ways:

- Each research project could develop its own specialized collection of library materials out of its operational funds to meet its own information needs.
- A research organization could maintain a central collection of books, journals, and other sources of information to meet the information needs of scientists and others in the organization, and either rely upon the scientists themselves to maintain and utilize the collection, or provide trained librarians to oversee the collection and help scientists use the collection and access other literature.
- A research organization could maintain a minimal book, journal, etc. collection, but provide centralized librarian assistance to scientists and others in locating and obtaining information from other sources.

A promising new source of information for libraries are the increasing number of large bibliographic databases now available on CD-ROM disks, such as CAB Abstracts AGRICOLA, and Current Contents.

Providing library services to scientists is expensive, and with limited funding research managers must make some hard decisions about how much of their funds should be spent on providing such services. This is not an easy decision to make. The impact on research of decisions regarding the provision of library services is likely to vary considerably, and is difficult to quantify. Some scientists rely heavily on libraries and library services, and their research could be affected to a considerable extent. Other scientists rely very little on library services, and their research may be relatively unaffected by such a decision.

Computer-based electronic information networks

Until recently, research scientists who needed access to scientific literature, but had no well-equipped libraries available locally, had no choice but to send requests for publications through the mail, or use other time-consuming procedures to obtain books, journal articles, and other information they needed for conducting their research. Often there were long delays between making requests and obtaining the needed materials, if indeed they were available. The turn-around time could be several weeks. Communication exchanges by mail with scientists at distant locations could also take weeks.

The development of the facsimile or fax machine has made it possible to transmit requests, orders, letters, and other documents almost instantaneously around the world, at relatively little expense. Today, most forestry research organizations have acquired fax machines, and are linked to other organizations inside and outside the country. The development

and widespread use of the fax machine has been a major step forward in speeding up communication throughout the world.

Recent developments in computer-based electronic information networks offer another major step forward in developing a global information access and exchange system that can enhance scientific communication (see Study Unit 11.2). It is now possible to gain direct access to distant sources of scientific literature and large databases related to forestry research. What is happening is a revolution in accessing information on a worldwide scale through the use of microcomputers linked to local access points that in turn are linked to other computer access points or nodes around the world. With this new communication capability, scientific research has truly become a global enterprise.

The capabilities of electronic information networking are changing so rapidly that it is difficult to keep up with developments. Having a centralized library, with facilities and capabilities to access such information networks, and/or having at least one person assigned to keep up with the latest developments in this fast moving technology, could be a major help to all forestry researchers in an organization. Developing these capabilities also can provide information of use to research administrators and managers, and to research support services.

Of course, achieving the promises of computer-based electronic networking depends upon a well-organized and supported access to such networks, and upon having a stable computing and communication environment. Some forestry research locations do not have such an environment today, but suffer from periodic failures of electrical and communication systems. In such situations, the use of electronic networks may be limited. Many forestry managers and scientists currently are not in a position to take full advantage of the existing electronic networking systems. However, it would be well to keep abreast of new developments in this field, and the ways in which they affect the doing and managing of forestry research.

A relatively recent innovation for information storage and retrieval is the use of compact disks (CD-ROMs). CD-ROM disks can be read through a personal computer using a relatively inexpensive CD-ROM drive attachment. Large quantities of information are now being made available on CD-ROM disks, and much more is likely to be made available in the future. The technologies in information storage, retrieval, access, transfer, and communication are changing rapidly, and will undoubtedly change the way in which forestry research is conducted in the future.

Statistical Services

Statistical concepts play a key role in the planning of research and in the design of experiments (Berg 1980). Most scientists in forestry research with graduate training are aware of the importance of statistics in designing experiments and analyzing data,

and have acquired some knowledge and skill in using statistics in research. But rarely is this enough to meet all of their needs. Furthermore, the majority of forestry and agricultural scientists in developing countries do not have advanced graduate degrees. A survey of national agricultural research systems in 79 developing countries indicated that 53 percent of the researchers had only a B.S. or equivalent degree (Bennell and Zuidema 1988). This closely corresponds to the situation in forestry research. Bengston et al. (1988) report that 54 percent of forestry researchers in developing countries of the Asia-Pacific region, and 60 percent in other regions had only a B.S. degree.

Without graduate training, many forestry scientists do not have the level of statistical expertise required to satisfactorily design scientific experiments, analyze observational data, and interpret the broader meaning of research results. Research managers should be aware of the importance of statistics in research, and should ensure that statistical expertise is available to scientists when needed through some form of statistical services within the research organization.

In many organizations, statistical services are responsible, in part, for the quality control of research. Statistics plays an important role in the design of experiments. Statistical analysis is widely used to estimate the reliability of data obtained from observations and experiments. Many research organizations require that study plans and publications be reviewed by a statistician to ensure that the experimental design and planned data analyses are procedurally correct. To do this efficiently requires that statistical consultation and advice be readily available to the scientists of the organization.

Meeting the need for statistical services can present a challenge to the manager of forestry research. Statistical services can be provided in different ways. One option for a larger forestry research organization is to employ a full-time or part-time statistician to provide the necessary statistical services to scientists. However, the organization must have a fairly large number of scientists to justify the expense, unless some of the costs and services of the statistician can be shared with another organization. If other nearby related research organizations have or need statistical expertise, a statistician might be jointly funded among several organizations, with each organization sharing in the use of the expert.

If statistical expertise is available outside the organization, it may be possible to contract for statistical services. This might be an option for smaller research organizations, where a full-time statistician is not needed. The difficulty with this arrangement is that the services may not be available when needed, resulting in long delays for scientists in getting statistical advice and in the review of study plans and manuscripts. Also, statisticians from outside of forestry research may not have the special knowledge and understanding of forestry research problems and methodologies to be effective.

Finally, one or more scientists or other qualified professionals could be given special training to enhance their statistical talents, with the understanding that they would assist others in the organization as required, as part of their job for a period of time.

The way in which statistical services are provided will, to a large extent, determine what kind of services can be provided, and how effective and efficient they are likely to be in improving the quality of the research conducted by the organization. While statistical services are not the only influence on research quality, they do play an important role in many areas of forestry research, and should not be neglected.

On the other hand, statistics can be misused. Statistics is not the most important and critical factor in many areas of research. Where it is not relevant, statistical services should not be allowed to become the final judge of all research. The goal of much forestry research is to produce results that are useful in practice, and useful results do not necessarily imply a high degree of statistical significance. Rough approximations can be useful in the absence of other information. Statistics always must be applied with common sense, and with an understanding of what practical goals research is trying to achieve.

Computing Services

Of all the changes that have taken place in recent years in how science is done, none is more fundamental and sweeping than the use of computers. Their increasing role shows no signs of abating; it is safe to predict that their use will continue to bring about startling changes in science (Feinberg 1985, p.182)

The widespread use of computers in many fields of scientific research is radically changing the way in which research is being done. Computers have greatly enhanced the ability of research scientists to conduct statistical analyses, and to process and analyze vast quantities of data. They make it possible to develop new ways to display data graphically that stimulate theoretical interpretations of research findings. Scientists are becoming increasingly dependent upon computers for word processing, data analysis, modeling, and other tasks. The use of computers is becoming widespread throughout all fields of forestry research, and cuts across all disciplines.

Computers have many applications in forestry research, including:

- data recording and analysis, with the computer linked directly to measuring equipment to automatically record and analyze data as it is obtained;
- database management, so that data can be accessed rapidly and cheaply in many ways;
- spreadsheet analysis for many different kinds of data manipulation and analysis;
- statistical analysis, with many different kinds of programs to summarize, analyze, display, and report on data;
- mathematical modeling, to simulate physical and biological processes taking place in the natural world;
- analyzing the impacts of management alternatives on complex natural systems;
- word processing, to prepare letters, reports, publications, and other documents;
- graphics, to prepare graphs, pie charts, and many other forms of data presentation in talks, publications, etc.;
- desktop publishing, to prepare newsletters and other printed materials, bypassing more expensive and time-consuming forms of publication; and
- communication among researchers, research installations, and others, linked electronically through telephone lines, utilizing satellites.

One of the options for providing computer services is to install a large central mainframe computer, under the direction and control of a computing services staff to handle all of the computing for the organization. This was the only option available in the early development of computers. Although some of an organization's needs for computing services can be met satisfactorily in this way, it is rarely satisfactory as a means of providing computing service support for research. In such a setting, serving research invariably becomes a secondary consideration. Priority is given to accomplishing the administrative and managerial tasks of those who supervise the central computing facility. Administrative reports, payrolls, accounting, and other administrative duties, which have firm deadlines, take precedence over research. Research computing can be delayed for days at busy times of the month or the year. Central memory on the computer is limited, and inadequate amounts are available for use by scientists when they need it. Any apparent economies from centralizing computing facilities for research are often lost by the continual delays and long wait times for scientific work to be completed so further analysis can be done. Such disruptions in research work are rarely considered in analyzing the efficiency of computer use.

Much of the computer needs of scientists now can be met by the use of personal desktop computers. The personal computer has rapidly increased in capability, and currently exceeds the capability of many large computers a decade or two ago. The rapid decrease in price has put computers within the reach of many scientists around the world. A large number of excellent standard commercial programs now are available for personal desktop computers, including programs for wordprocessing, spreadsheet analysis, database management, graphics, statistical analysis, and many other special applications. Most scientists can readily find programs that are easy to use in meeting a variety of their needs. In addition to this more general software, many computer programs specific to forestry have been developed, and are available for use (Rose 1987). While these forestry-related programs are not necessarily oriented to forestry research, they do indicate the wide range of uses for computers in forestry.

An important source for information about microcomputer applications in forestry is the Forestry Resources Systems Institute (FORS) (122 Helton Court, Florence, Alabama 35630, USA). FORS is a research support network that publishes a newsletter, *The Compiler* (paid subscription), containing feature articles on microcomputers and their application in forestry, reviews of software, notices of meetings, etc., that is mailed to members throughout the world.

In many larger organizations, the increasing use of computers has led to a combined computer system that integrates a mainframe computer and desktop computers into what is termed a Local Area Network (LAN). The organization maintains a larger central computer system, which is tied electronically to a network of decentralized personal computers on the desks of staff members. Larger and more complex computer processing jobs, and the job of maintaining large files and databases, are carried out by the main central computer staff. The desktop computers are used by staff to meet their own personal needs, and allow access to files stored on the mainframe and to the computing power of the mainframe. This type of hybrid computing system is growing rapidly.

The establishment of a computer system to support research requires a considerable degree of knowledge and careful thought as to the uses computers are to serve in the organization. Regardless of the computer system adopted by a research organization, it must be recognized that the use of computers requires special skills and knowledge. Personnel will require training in the use of the equipment and the various software programs and their applications in forestry. Special provision must be made for obtaining technical help in the selection, installation, maintenance, and use of computer equipment.

In some cases, special needs for computing services may require skills in computer programming, which many scientists do not possess. To meet these needs, research

organizations may have to provide for the services of computer programmers, either as staff members or on a contract basis.

Publication Services

Most research organizations maintain some form of a publication service group that is responsible for publishing and disseminating research findings and for producing other publications needed by the organization. A publication service group provides many services to a research organization. They:

- assist scientists in preparing manuscripts for publication through editing, typing, preparing graphs, charts, and other illustrations, overseeing contacts with outside publishers, and other means;
- maintain quality control over publications to assure the editorial and scientific soundness of articles submitted for publication, by editing manuscripts and obtaining peer reviews;
- publish and distribute research, technical, and popular reports as an outlet for research findings;
- provide or obtain translating services to meet special language requirements of some publications; and
- publish and distribute nontechnical informational material related to station administration and management.

A good editor, with qualified assistants, can do much to improve the quality of the scientific and technical publications coming out of a research organization. Such an editor should be skilled in editing scientific publications in the language(s) in which they are to be published, and in preparing material for publication. An editor for a forestry research organization should be familiar with the subject matter being edited, either through experience as a forestry researcher, or through a systematic program of in-field and in-lab training designed to familiarize a nonscientist with the research being conducted by the organization. An editor also should be familiar with potential audiences for the research results produced by the organization and their particular needs, and with effective outlets for disseminating research results to reach the intended audience.

Research managers should plan to provide adequate funds to finance the publication of research results and the dissemination of results to users. There is little justification for conducting a research program in forestry and forest products, if the results never reach potential users because of the lack of funding. In budgeting for forestry research programs, it is the responsibility of research managers to achieve an appropriate

balance between doing research and disseminating research results. One way to achieve this balance may be to insist that the budget in study plans for research projects include a cost component for the publication and dissemination of research results, which would be obligated for that purpose.

In smaller organizations without adequate funds for editing services, research managers may have to personally assume responsibility for all review and editing functions prior to dissemination to ensure that the publications produced are acceptable.

Special Research Support Services

In order to provide research scientists with the equipment and supplies that they need, research managers may have to provide for special services, which may be under the supervision of the administrative services branch. Such special services might include facilities and expertise to fabricate equipment, such as wood and metal workshops, glass blowing facilities, etc. They might include facilities and personnel to care for animals that are used in experiments or to provide work power. The special services might include draftsmen, cartographers, photographers, engineers, or similar specialists. Often, such special services are best administered centrally, unless they can be fully utilized by a single research project or facility.

Activities - Study Unit 8.1

The following exercises are designed to help you assess the status of your organization's scientific support services, and identify areas needing improvement. They outline a systematic procedure you can use to:

1. assess your organization's needs for improvements in scientific support services;
2. set priorities on desired improvements; and
3. identify resources and actions needed to improve the provision of scientific support services in your organization.

Module 8 - Providing Support Functions

Activity 1

To help you identify the strengths and weaknesses of scientific support services in your organization, use the table below to rank the current status of each type of service.

For each service, check the box that best describes the current status.

Scientific Support Services	Services Currently Provided Yes/No	Current Status Of Services Provided			Services Not Provided But Desired
		Very Good	Adequate	Needs Strengthening	
Computer Services					
• software					
• hardware					
• expertise (inhouse)					
• accessibility					
Statistical Services					
• expertise (inhouse)					
• access to external expertise					
Publication Services					
• editing, layout, illustrations					
• quality control					
• peer review					
• publishing and review					
• translation services					
Information Services					
• library services					
• access to scientific literature via electronic databases, abstract journals, etc.					
• subscriptions to journals, newsletters, etc.					
• contact with other scientists					

Review your results from this table carefully. Those research support services that need additional strengthening or are not now provided, but desired, have been identified and now can be addressed. These are areas for improvement.

Comment 1

The intensity of research support services provided by each organization will uniquely reflect the mix of resources available to the organization, its depth, priorities, funding levels, history, etc. Organizational weaknesses can be easily determined, particularly when a group of scientists review the situation according to the format provided in this question.

Activity 2

From the previous table, in the space below list those scientific support services that you believe need to be improved. For each of those listed, describe what specific improvements are needed.

<u>SCIENTIFIC SUPPORT SERVICES NEEDING IMPROVEMENT</u>	<u>SPECIFIC IMPROVEMENTS NEEDED</u>
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>

Comment 2

We hope that you have been able to specifically determine the realistic capacity of your organization to provide or improve upon its research support service delivery. Asking why your organization is currently not providing the service at a level or intensity needed can provide valuable insights to the roots of the problem, and can create windows of opportunity for generating solutions.

Activity 3

Based on your own judgement, or with the assistance of others, list in order of priority the specific improvements needed in scientific support services that you just identified.

<u>IMPROVEMENT PRIORITY</u>	<u>SCIENTIFIC SUPPORT SERVICE IMPROVEMENT NEEDED</u>
1	
2	
3	
4	
5	
6	

For the three most important improvements you just listed, estimate what resources (people, skills, money, facilities, etc.) would be required to make this improvement, and suggest a strategy by which this improvement might be brought about.

A. Improvement Needed:

Resources required (what additional resources do we need to make this improvement?):

Suggested strategy (what do we have to do to bring this about?):

B. Improvement Needed:

Resources required (what additional resources do we need to make this improvement?):

Suggested strategy (what do we have to do to bring this about?):

C. Improvement Needed:

Resources required (what additional resources do we need to make this improvement?):

Suggested strategy (what do we have to do to bring this about?):

Comment 3

The insights and information gained by responding to question 2 can provide the basis for designing organizational responses that improve the provision of high quality research support services. Be sure to consider all the factors that would contribute to an improvement program (such as key actors and their viewpoints, financial considerations, personnel, time, and other resources).

Congratulations for completing these exercises! We hope that you not only have gained an greater appreciation for research support services and their importance to the production of high-quality natural resources research, but also have generated a plan improve your organization's research performance by ensuring that your scientists and researchers are properly supported by specialized services.

Summary - Study Unit 8.1

In order for forestry research organizations to efficiently, effectively, and consistently produce quality research, they need to provide scientists with a variety of support services, including access to the scientific literature, and statistical, computer and publication expertise. This unit helped you to systematically review your organization's current status of providing scientific support services to researchers, the needs for additional support services, its capacity to improve service delivery to scientists and researchers, and a plan to implement such improvements.

If you would like more information about providing scientific support services, we urge you to obtain and review some of the literature cited and other references listed at the end of the module.

Study Unit 8.2

Providing Administrative Services

No research organization can exist without well-functioning administrative support services. In order to allow scientists to focus on research, other persons in the organization are hired to take care of the management of personnel, procurement, finances, property, and general office operations. In this unit, you'll learn about how these important services can affect the quality of forestry research. You'll discover potential conflicts that arise when these services drift away from supporting research to supporting overall program administration as an end in itself. And you'll learn how to evaluate and improve your own organization's administrative service support system, and where you as a manager of research fit within the overall structure.

Objectives

When you have completed this study unit you should be better able to:

- describe the various administrative services provided by your research organization, and identify the personnel who provide those services;
- describe the functions of the various administrative services within your organization; and
- use a structured procedure to evaluate your organization's administrative service support system.

Providing Administrative Services

One of the key roles of the manager in a forestry research organization is to manage the resources under their control to achieve the objectives of the organization effectively and efficiently. These resources include people, funds, information, facilities, equipment, and supplies. To successfully manage these resources, research managers must develop and rely upon an administrative services staff to assist them in administering the research programs of the organization, and ensure that its resources are managed according to the legal and regulatory mandates of the national government and others who provide these resources.

The Role Of Administrative Services

The administrative services of a forestry research organization serve two major functions: a control function and a research support function. Research managers must ensure that the personnel and activities of the organization comply with the laws, regulations and policies established to direct activities of national government agencies, and those established by other funding agencies. These constitute the institutional framework within which the organization must function. Research managers also must provide scientists and other staff with the special expertise necessary to carry out the many administrative details required by any organization.

In most research organizations these administrative services are provided by a special group of people who are trained to interpret and administer the guidelines and regulations established by the research organization and the agency within which it functions. Such assistance usually includes the following functions: personnel management; procurement management; financial management; property management; and office management. In large research organizations each service function may require the establishment and management of a separate administrative group. In smaller organizations several functions may be handled by one person, or by the administrative unit within which the research organization is located.

Managers of the administrative services branch and their employees can have a major impact on the organizational environment, depending upon the way in which they view their job. As mentioned above, administrative services fulfills two important functions in a research organization: controlling, to ensure that laws and regulations are followed; and research support, to help researchers and their staff achieve the goals of the organization. An administrative services staff that concentrates its attention on the controlling function, and neglects its support function can hinder the organization in achieving its goals. A research organization needs the support of an administrative services staff in carrying out its program of work to achieve its objectives effectively and efficiently.

If administrative services are managed too independently of the forestry research program, conflicts may arise that seriously impair the implementation of the forestry research program. In extreme cases, administrative services may come to be managed as if it were

an end in itself, rather than the means to an end. Meeting the goals and objectives of administrative services, rather than those of forestry research, may become its driving force. The challenge to the research manager is to provide a balance of both controlling and support functions of administrative services.

Personnel Management

The function of personnel management in the research organization is to administer the recruitment, training, and career development of the personnel in the organization, and maintain personnel records. They also may handle payrolls, labor relations, and the management of fringe benefits. Although personnel management is a responsibility of all supervisors within an organization, most organizations centralize many of the personnel management functions within a personnel management group.

The hiring and personnel management policies of most government organizations are constrained by the laws, regulations, and policy guidelines established by higher authority within the government. These vary from one country to another, and may vary from one agency to another within a country, and cannot be reviewed here. The more general discussion here should be interpreted in light of the particular organizational constraints that each organization faces.

Long-range personnel planning

All organizations should have a long-range plan for future staffing that is closely related to the strategic plan of the organization. Such a plan should include a review of current staffing in the organization, future program directions, expected personnel needs to support such program directions, tentative schedules of promotions, transfers, reassignments, and retirements, and expected new personnel requirements over the next several years. Personnel requirements should include a description of what skills and knowledge are likely to be required, sources of future personnel, and the likely availability of people with the desired qualifications. If the expected supply of needed personnel does not meet the expected demand, consideration should be given to how this deficiency could be made up.

A long-range personnel plan also should explore more than one option for future staffing. At least two scenarios for personnel needs may be outlined:

1. A minimum program size that describes the essential set of activities for the organization and related staffing needs; and
2. A desirable program size that describes a more complete or desirable set of activities and related staffing needs.

The desirable program should attempt to strike a balance between research and information needs, and the realistic capacity of the organization to respond to those needs.

Expansion of the research and support staff too rapidly beyond a certain point could change the character of the organization, and reduce the efficiency and effectiveness of the organization, given the existing management structure.

Recruitment

Authority to recruit personnel to fill position vacancies is often severely constrained by government laws, regulations, and policies. Nevertheless, within these constraints, every effort should be made to recruit the best qualified candidates for any vacant position. Considering the salaries, training, and other expenses of personnel, an organization's investment in people is one of the largest investments it will make in the future. Making a career commitment through the hiring of a research scientist, for example, is a major capital investment decision for any organization. It commits the organization to future large annual expenditures of funds for salaries and expenses that often greatly exceed other operating expenses.

Systematic thought and appraisal should go into any large capital investment decision such as this. The specifications of the job should be delineated as precisely as possible, and the qualifications of potential candidates should be evaluated carefully. This topic is covered in considerably more detail in Study Unit 9.3.

Career development

Research managers, supervisors, and staff in personnel management have the responsibility for determining the interests and capabilities of employees so they can develop training and work experiences that increase employee skills and knowledge. Employees with improved knowledge and skills are likely to perform better in their jobs, and become more eligible for promotion to fill expected vacancies. Every organization needs a cadre of trained and capable people that can move to higher positions with a minimum disruption of ongoing operations. Every supervisor should be assigned responsibility for the career development of the employees they supervise. Some of the challenges managers encounter in developing individual capabilities of employees are discussed further in Study Unit 9.3.

Training

Every organization has its own unique set of procedures for carrying out certain jobs, and special office, laboratory, and field equipment to be used. Every employee requires some training in organizational procedures, use of equipment, and safety, at a minimum. Employees also need training to develop new knowledge and skills to better develop their capabilities to contribute more effectively to the achievement of organizational and personal goals. The responsibility for training is shared by research managers, supervisors, and personnel management staff.

Some training can be done by the employees themselves, on their own initiative and on their own time, with perhaps some assistance and advice from the organization, but at little cost to the organization. Other training can be carried out informally in-house by the employee's supervisor or other qualified staff member, at relatively little cost to the organization. Some training may have to be done through special training courses, either at the job location or at some other location. Such training courses can be expensive if long time periods are involved and travel expenses are high. Supervisors need to carefully select candidates for such training, and justify the expenditures involved.

Where qualified candidates are not available for a desired position, and/or a few select personnel within a research organization have a high professional potential, the organization may provide full or partial support for an employee to obtain a graduate degree in some desired area of professional expertise. This usually involves a long-term commitment in employee development, and is not to be undertaken lightly.

Research managers are responsible for:

- identifying training and development needs;
- developing employee training plans to meet needs;
- determining the best sources of expertise and opportunities to meet varying training needs;
- arranging for planned training activities;
- documenting training activities; and
- ensuring that employees have the opportunity to utilize and apply new knowledge and skills on the job after training.

Training is such an important part of research support services that an entire study unit is devoted to this topic. Please refer to study unit 9.4, "Providing Training and Education," for more detail about training.

Promotion and reassignment

As part of career development, employees within an organization are usually rewarded for good job performance by promotion and/or reassignment. One of the most difficult jobs in personnel management is supervising the promotion of employees. All employees expect to be rewarded for good performance with some form of job advancement. Personnel management includes establishing and administering qualification standards for promotion to ensure equitable treatment of employees. A fair system of promotion that rewards superior performance with career advancement provides an incentive to perform well in achieving organizational goals, and provides job satisfaction to employees.

A perennial problem in many developing countries has been the lack of promotion opportunities for research scientists. Many research organizations are small, which often limits opportunities for promotion. In many countries, employees can advance up the government career ladder only through the managerial and administrative ranks. Thus, ambitious competent researchers, who wish to advance their careers, must leave research and go into administration. Usually, the regulations and procedures governing promotions in government service are established by legislative mandate and at high administrative levels in the government. The individual research manager may be able to do little to change them. In such situations, the manager may find it necessary to devise other means in order to retain experienced and valuable employees, such as making the current job more attractive (refer to study unit 9.2, "Creating an Appropriate Environment and Incentives," for further discussion and suggestions). However, in some cases it may be possible to establish dual career ladders, one for research and one for administration, each with their own criteria for advancement.

At times, the organization may require job reassignment for career development or to meet needs of the organization. This may present hardships for the employee, but it may be necessary to further the purposes of the organization. On occasion, employees may request reassignment for personal reasons. In order to retain a competent employee with desired skills and knowledge, the organization may decide to honor such reassignment requests whenever possible, as long as it does not interfere materially with the achievement of organizational objectives.

Payrolls and management of fringe benefits

Most governmental organizations have established relatively firm minimum qualifications for grade levels and pay levels for the various job positions within government service. One of the responsibilities of personnel management is to oversee the classification of positions to see that they comply with established policies, and to check on qualifications of the personnel being considered for particular positions. Another responsibility is to

document and maintain reports of time worked for payroll purposes. Personnel management also may have the responsibility of managing employee benefit programs, such as health benefits, insurance programs, and retirement plans, and other fringe benefit programs. They may be charged with handling labor-management relations, incentive award programs, and special programs affecting employee health and safety.

Separation and retirement

Personnel management is responsible for handling voluntary and involuntary separations of employees from the organization. Voluntary separations, where an employee leaves the organization at their own request, typically requires documenting the service record of the employee, and determining what, if any, benefits from service accrue to the employee. Involuntary separations may require documenting poor performance, handling legal appeals by employees threatened with separation, and determining what, if any, service benefits are due. Personnel management may have to provide counseling for employees prior to retirement regarding retirement benefits and procedures, and administer the paperwork involved in retirement.

Procurement Management

Research organizations must purchase supplies and equipment and contract for services to carry out their mission. Often, the procurement of goods and services is severely constrained by legal and regulatory requirements. Although decentralized authority to obtain needed goods and services is desirable, on the grounds that those who are closest to the problem are best aware of what is needed, the special complexities of procurement and contracting argue for a strong degree of central control over the process.

In most government organizations, authority to purchase goods and services required for the operation of the organization tends to be centered in a special purchasing or procurement group, although individuals may be authorized to make limited expenditures for clearly specified purposes. Procurement is centralized because special legal, business, and accounting skills and expertise are required to comply with the many laws and regulations that often apply to such procurement. Only people qualified through training and experience are given the authority to perform procurement and contracting duties. Procurement also is centralized to better control the potential for abuse where funds are disbursed. Another reason for the centralization of procurement is to take advantage of economies of scale offered by purchasing larger quantities of goods.

Some goods and services are obtained through special contracts with vendors and suppliers. The development and supervision of such contracts, which often require competitive bidding procedures, requires special legal expertise that goes beyond the competence of most research managers and researchers. This type of contracting usually is handled by a special centralized group, either within the research organization, or at a higher administrative level. The supervision of contracting usually includes the preparation and/or review of technical specifications, the development of legal contract documents, and the development of bidding procedures.

Procurement management must determine needs, determine best sources of supply to meet those needs, obtain the goods and services, distribute the goods and oversee the delivery of services, maintain records of financial transactions, and prepare reports of financial operations as required.

Financial Management

A government agency, such as a research organization, is responsible for conducting its financial activities in a businesslike manner, complying with applicable laws and regulations. The responsibilities for the proper financial management within research organizations are typically assigned to a special budget and financial management group under the control of the manager in charge of the research organization. The responsibilities of financial management may include:

- assisting in preparing financial plans, budgets, and other requests for funding;
- maintaining records and data to assist research management in determining future funding requirements;
- distributing appropriated and other funds according to the applicable laws and guidelines;
- administering the payment of financial claims by vendors supplying goods and services to the organization, and the reimbursement of legitimate employee expenditures;
- establishing financial controls to ensure funds are expended prudently and lawfully;
- maintaining records of fund allocations and expenditures to comply with existing laws and regulations;
- preparing periodic financial reports as required; and

- assisting research personnel in procuring the goods and services they need to conduct research, within the applicable guidelines and authority.

For further information on this topic, please refer to module 7, "Financing and Budgeting."

Facilities Management

All forestry research organizations require some type of facilities in order to carry on their work. These may include office and laboratory space or buildings, storage areas, and often many other special types of buildings for the storage and/or repair of transportation vehicles and special equipment, housing for work animals, staff housing, and many other kinds of facilities. An important job of the research manager is to provide the facilities necessary to carry out the program of research being conducted, have them maintained in good working order, and oversee the allocation of their use among competing demands for them.

The type of facilities needed will depend in large part on:

- the scope and nature of the research to be carried out;
- the present staffing;
- expected future staffing and research programs;
- space and other requirements for special equipment and laboratory tests; and
- special demands imposed by climate and other considerations.

In some cases it may be necessary to construct new facilities, or modify old facilities, in order to carry out a planned program of research. Space does not permit a detailed discussion of the special challenges that managers encounter in planning, designing, and overseeing the construction of new facilities. For a thorough review of this subject, the reader is referred to a publication by ISNAR (1993), "Guidelines for planning and designing agricultural research buildings."

Facilities such as office and laboratory buildings are expensive to construct, and can deteriorate rapidly unless they are properly maintained. The maintenance of facilities can be characterized by three categories, based on cost (ISNAR 1993):

- **No Cost.** No-cost maintenance includes those jobs that require little in the way of supplies and equipment other than staff labor. This category of maintenance includes sweeping, mopping, dusting, washing windows, tightening hinges on doors, replacing displaced roofing tiles, cleaning leaves from gutters, and similar kinds of tasks performed primarily with available labor. The aim of this type of maintenance is to

reduce the amount of deterioration of facilities, and prevent further deterioration, thus reducing the need for more expensive maintenance and repairs later on.

- **Minimal Cost.** Minimal cost maintenance includes those jobs that require the use of staff labor and a small amount of materials or equipment. This category would include such tasks as minor touch-up painting, repair of broken glass or screening, patching and repairing concrete walks and curbs, replacing damaged hardware on windows and doors, repairing toilet and sink fixtures, and similar tasks. The aim of this type of maintenance is to repair facilities at an early stage of disrepair before substantial and costly deterioration occurs.
- **High Cost.** High cost maintenance includes those jobs that may require special skills, equipment, and supplies that are not readily available within the organization, and that may have to be procured by contract or purchased from private firms outside the organization. This may include major repairs to, or even total replacement of, existing facilities that have been allowed to deteriorate due to heavy use and/or the lack of preventative maintenance. Buildings that have been poorly designed, or have been constructed using poor materials or construction techniques, are likely to require high cost maintenance within a few years.

The first two categories of maintenance can be described as preventative maintenance. The aim of preventative maintenance is to carry out a systematic program of maintenance that will keep buildings and other facilities in good repair and in good working order in order to prevent further (and often costly) deterioration. For example, the prompt cleanup of acid spills on a laboratory counter or floor may result in little damage, but leaving the spills for any length of time may result in irreversible damage to the counter or floor. A leaking roof, promptly repaired, may have caused some temporary inconvenience, but resulted in little damage. Left unrepaired over a period of time, a leaking roof may result in deterioration of ceilings and interior wall surfaces and doors, which could require expensive repairs to correct.

In recent years, operating funds for many forestry research organizations have shrunk drastically. As a result, funds for the maintenance of facilities have in some cases essentially disappeared. Money needed for maintenance is used to fund some other even more urgent need. As a result, research facilities in many countries are deteriorating rapidly, and eventually will become unusable. Even maintenance that requires relatively little funding may be overlooked or ignored. This does not mean that the problem goes away. In fact, it is likely to get worse rapidly. Unfortunately, human nature being what it is, if facilities are poorly maintained, and are beginning to deteriorate, there is a natural tendency to treat them with less respect than would be the case if the facilities were kept in good repair. There is a natural tendency to assume that things that have been allowed to deteriorate into a poor condition cannot be of much value, and are not worth spending much time to keep in shape. This aggravates the problem of maintenance.

Postponing preventative maintenance is a recipe for disaster, as small problems grow into large problems. Unfortunately, once facilities have been permitted to deteriorate significantly, the job of upgrading them to an acceptable standard may be beyond the capabilities of experiment station staff or the funding available. Proper attention to building design at the time of construction can reduce or avoid many problems that greatly aggravate maintenance problems.

The upkeep of large facilities can become a major expense for any research organization. For instance, the gift of a completely outfitted laboratory from an international donor to a small but developing research organization unfortunately may become a major drain on the operating funds of that organization, diverting funds from current programs, and creating an imbalance in the research program.

To keep facilities in good working condition, managers must insist that preventative maintenance tasks be carried out on a regular routine basis. Every research organization should attempt to develop a systematic program of routine preventative maintenance. This can be a simple list of jobs to be done, indicating how frequently each is to be done, whether daily, weekly, monthly, quarterly, semi-annually, or annually. If this program of preventative maintenance is to succeed, it is critical that the responsibility for overseeing the program be delegated to appropriate staff, who will be held accountable for seeing that it is followed. All experiment station staff should be expected to report any maintenance problems they notice promptly, before they become serious.

As was indicated above, many of the more routine maintenance tasks often can be carried out at relatively little cost by available staff employees at each research station, although a modest outlay may be required for simple tools, equipment, and cleaning and other maintenance supplies. It is important to provide enough funds to carry out these activities, even if it means cutting back slightly on other expenses, or requiring those research units that use the facilities to contribute towards their maintenance from their operating budgets.

Well-maintained facilities not only facilitate research activities, they have the added benefit of instilling a feeling of pride in employees and the local community.

Property Management

In addition to facilities, forestry research organizations require tools, equipment, and other property to carry out its program of work. The tools and equipment may range from shovels and diameter tapes, to motor vehicles and sophisticated and expensive laboratory and office furniture and equipment. Adequate facilities and equipment are essential for carrying out programs of research. Research managers are responsible for ensuring that the tools, equipment, and other property required for approved programs of research are obtained, maintained in good condition, and available when needed.

Managing research facilities and equipment, and providing the myriad of supplies and small items of equipment required by a program of research, requires special knowledge and skill. Facilities must be kept clean and in good repair. Laboratory and office space must be allocated among the various groups within the organization. Equipment must be made available, scheduled, and serviced when necessary. Supplies required to keep equipment in good working order and functioning effectively must be ordered and made available as needed. New equipment must be ordered in time to meet expected needs. Contracts for the procurement of property must be drawn up and closely administered.

The function of procuring and maintaining facilities and equipment for a research organization and documenting its acquisition and disposition, is often centralized within a research organization to ensure that legal and regulatory requirements are fully met. The management of facilities and equipment may be assigned to one responsible staff member or administrative services group, or the responsibilities may be divided among several of the organizational staff.

The responsibility for those items commonly used by a large number of personnel, such as major buildings, motor vehicles, copy machines, etc. is often assigned to a special unit in the administrative services branch. The responsibility for items commonly used by only one person, or by one research unit, such as a desk calculator or adding machine, may be assigned to that person or unit. Even in this case, however, property records, the maintenance of that equipment, and the purchase of supplies required for that equipment may be centralized.

Office Management

Office management is the responsibility of research management. The function of office management is to provide secretarial, clerical, and other services required by research scientists, managers, and other personnel in the research organization, and to maintain the records of organizational activities as required by law and by management needs of the organization. An effective and efficient staff of office personnel is required to carry out the necessary duties. To achieve this, the research manager must recruit competent personnel, develop their knowledge and skills through continued training, provide modern office equipment to enable them to utilize their skills to the fullest extent, and motivate people to a high level of performance.

Office managers must be alert to determine the office needs of research personnel, determine how those needs can best be met, and then ensure that office services are provided in an effective and timely manner.

The records of a research organization provide a history of its operations. This includes the correspondence of the different groups within the organization, and records of plans, accomplishments, and other activities. The maintenance, retrieval, and eventual disposition of documents relating to research studies, data and information obtained by measurements and analysis, and records of publications and other means of dissemination

are of particular importance to a research organization. The maintenance and disposition of some records are in many cases prescribed by law. It is the responsibility of research management to ensure that these laws are complied with. Careful thought must be given to preserving records in such a way as to maximize their potential usefulness in the future. Maintaining duplicate records of important documents and data sets on microfilm, while expensive, may be essential to preserve important records.

Management of Vehicles

A critical aspect of property management, and one often neglected by forestry research organizations, is the proper management and maintenance of vehicles. Maintaining an operational and dependable fleet of vehicles is essential for effectively implementing the research program. Undependable vehicles, and delayed or poorly done maintenance can cripple the most well-planned field oriented research program. Vehicles may represent the greatest annual capital outlay for the research organization, and thus represent a considerable investment.

The key to effective management of vehicles is to select vehicles appropriate for the job, and keep them in good working order. Newly purchased vehicles should be carefully selected and matched to the conditions under which they will be used. For instance, if much of the research is conducted in remote areas accessible on rough, unpaved roads, then 4-wheel drive vehicles with heavy duty components should be selected whenever possible. Light duty vehicles will not last and will only result in continual headaches and high costs for repairs. A key factor in the selection of vehicles should be the availability of prompt and reliable repair service, including the availability of parts that may need replacement.

A systematic program of preventative maintenance is essential to ensure the fleet of vehicles will continue to run smoothly. Such periodic maintenance detects and corrects small problems before they become major. By reducing overall wear through the periodic replacement of fluids, filters, and other parts, preventative maintenance significantly extends the life and usefulness of the vehicles.

Forestry research organizations also need to decide whether they want to manage their own maintenance and repair of vehicles, or to contract out this work to a commercial establishment. Such a decision should be based on the number of departmental vehicles in use, the conditions under which they operate, the availability of dependable commercial repair shops, etc. Should the research organization decide to establish its own shop, hiring a highly competent and dependable head mechanic is of chief importance. The research organization also must provide repair facilities, purchase an array of specialized tools and equipment, and then protect these tools from misuse and theft. It also must establish an inventory of frequently used supplies and parts, particularly those that often fail. Given the start-up costs and the complexity of running a repair shop within the organization, many research organizations establish contractual agreements with local shops for repairs. Even with contractual agreements, however, preventative maintenance

is often neglected. Another approach is to maintain a limited capacity to conduct preventative maintenance, with a small inventory of parts, tools, equipment, and supplies, and to contract out the major repairs.

Drivers themselves determine to a great extent the useable life of vehicles. Drivers abuse vehicles by speeding on rough roads, by recklessly crossing rivers and high water, by using improper driving procedures (e.g., "riding the clutch"), by overloading the vehicles beyond their rated cargo weight load, and by failing to periodically check essential fluids (coolant, oil, etc.). Managers need to carefully monitor vehicle use (and abuse!), and restrict driving privileges when necessary.

A particularly difficult problem in managing vehicles is monitoring and managing their use to ensure that they are properly used only for appropriate purposes. Those uses permitted, and those forbidden without express approval from the director or other senior administrators, must be clearly stated and communicated to all who use vehicles. Illegal and improper use must not be tolerated.

Activities - Study Unit 8.2

Activity 1

Using the table below, identify the personnel responsible for the provision of administrative services within *your* research organization. Also note when particular services are divided among several employees, or when one employee provides several services. We have left spaces for you to add services that we may not have listed, yet which are important to your organization.

Services	Names of Personnel Responsible
Personnel Management	
• Long-range planning	
• Recruitment	
• Career development	
• Training	
• Promotion and reassignment	
• Payroll	
Procurement Management	
• Purchasing	
• Contracting for services	
• Inventory control	

Services	Names of Personnel Responsible
Financial Management	
• Financial planning and budget preparation	
• Record keeping	
• Funds distribution	
• Administer payments	
• Establish financial controls	
• Financial reporting	
• Procurement assistance	
Property Management	
• Facilities management	
• Equipment management	
• Maintenance and upkeep	
Office Management	
• Secretarial	
• Reception	
• Clerical	
• Records management	

Services	Names of Personnel Responsible
Research Administration	
• Overall management and direction	
• Public relations	
• Interorganizational liaison	
• Reporting	

If you wish, you can now use this information to prepare a detailed staffing pattern (organigram) to help you see exactly how your organization is structured, as well as the flow of responsibility and authority.

Comment 1

This first activity should be fairly self-explanatory. As manager of a natural resources research organization, you should know who is responsible for all activities and services that impact or affect your research activities, even if they are not under your direct supervision. This information is critically important for managers who wish to maximize their own and their organization's efficiency and effectiveness.

Activity 2

Rate the quality of delivery of each administrative service specified in the table below *for your own organization*. As usual, we have left spaces for you to add services that we may not have listed, yet which are important to your organization. As part of your assessment criteria, consider how well these services balance the dual demands for administrative control and research support.

Services	Excellent	Acceptable	Marginal	Unacceptable	Not applicable
Personnel Management					
• Long-range planning					
• Recruitment					
• Career development					
• Training					
• Promotion and reassignment					
• Payroll					
Procurement Management					
• Purchasing					
• Contracting for services					
• Inventory control					

Services	Excellent	Acceptable	Marginal	Unacceptable	Not applicable
Financial Management					
• Financial planning, budget preparation					
• Record keeping					
• Funds distribution					
• Administer payments					
• Establish financial controls					
• Financial Reporting					
• Procurement Assistance					
Property Management					
• Facilities management					
• Vehicle management					
• Equipment management					
• Maintenance and upkeep					
Office Management					
• Secretarial					
• Reception					
• Clerical					
• Records management					

Module 8 - Providing Support Functions

Services	Excellent	Acceptable	Marginal	Unacceptable	Not Applicable
Research Administration					
Overall management and direction					
Public relations					
Interorganizational liaison					
Reporting					

Comment 2

Evaluating the quality of administrative services intended to support research activities is an important first step in improving overall research productivity and quality. Think about the criteria you used to conduct your evaluation; that is, how did you judge whether service delivery or performance was excellent, acceptable, marginal, or unacceptable? Choice of evaluation criteria is important, so try to be thorough and complete.

Rating the provision of administrative services leads to problem identification and solution finding, topics dealt with in question 3.

Comment 3

The outcome of this process is hopefully to determine why the problems exist, and to generate solutions. Once problems or weaknesses are identified, you need to look deeper to investigate why the problem exists, or in this case, why the provision of services is not adequate. This may involve talking with or, more importantly, listening to your staff. As you work to clarify the problem and its causes, solutions will begin to appear. Don't rush the process or hastily implement poorly thought-out solutions. Patience and participation are essential when dealing with organizational and personnel problems.

Summary - Study Unit 8.2

One of the key roles of managers of research organizations is to manage the resources under their control to achieve the objectives of the organization effectively and efficiently. Thus, to successfully manage these resources, adequate and supportive administrative services must be provided by an administrative services staff who assist researchers and scientists in the implementation of the organization's research program.

We hope that by completing this study unit and by using the structured evaluation procedure provided, you have increased your understanding and ability to evaluate and improve the administrative services supporting your organization's research efforts. Use this common sense approach whenever you want to thoroughly and methodically evaluate your organization's performance.

If you would like more information on this topic, we encourage you to obtain and review some of the references listed at the end of this module.

Final Skill and Knowledge Assessment

Module 8 - Providing Support Functions

On the following page are listed a number of skill and knowledge statements derived from the objectives of the study units in module 8. These are identical to those listed in the initial skill and knowledge assessment at the beginning of the module.

Now that you have completed all of the study units in the module, please read each statement carefully and indicate with a checkmark the level that best describes your current skill or knowledge, from 1 to 5, using the following descriptions:

- 1 I cannot perform this skill, or I have not been exposed to the information.
- 2 I cannot perform this skill, but have observed the skill or have been exposed to the information.
- 3 I can perform the skill or express the knowledge with assistance from others.
- 4 I can perform the skill or express the knowledge without assistance from others.
- 5 I can perform the skill or express the knowledge well enough to instruct others.

Skill or Knowledge Statement	Your Level of Skill or Knowledge				
	1	2	3	4	5
a) Identify and assess the needs for various scientific support services within the organization or unit you manage.					
b) Assess the capacity of your organization or unit to provide the scientific support services needed, and identify alternative sources of such services.					
c) Describe the various administrative services provided by your research organization, and identify the personnel who provide those services.					
d) Describe the functions of the various administrative services within your organization.					

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