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Resource management in a dynamic environment

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RESOURCE MANAGEMENT IN A DYNAMIC ENVIRONMENT

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Introduction

After spending over 40 years in research libraries, and having spent over 35 of these responsible for the allocation of resources for a research university, I believe I have attained some understanding of the forces that are involved in this critical aspect of library administration. While there is a substantial body of recorded information outlining the major principles and practices of resource management, and while there have been innumerable articles and books produced on the subject, it is clear to me that there is a lot less science and a lot more intuition and judgment involved than we have been told by management savants and gurus. In this paper I will look at some of the forces that drive library budget decisions, including trends in research library funding and in research library resource allocation over the past twenty years. I will talk briefly about the role of strategic planning as it applies to resource allocation and conclude with four practical examples of funding decisions.

Growth of library expenditures

The recent study by the Mellon Foundation entitled *"University Libraries and Scholarly Communication"*[1] traced the growth of research library expenditures in the United States over the period 1960-1990 and found, not surprisingly, that the pattern of physical and fiscal growth generally reflected the history and development of higher education over that period. In the 1960's where there was a boom in spending for research and development as well as higher education, library acquisitions soared. In

the 1970's and 1980's inflation in general and serial price inflation in particular took a heavy toll on the rate of collection growth. One of the closest correlations that has existed historically is between the number of doctoral degrees granted and the rate of growth of library collections. This was certainly characteristic of the 1960's. What is also true, however, is that library budgets are more slow to react to perturbations in graduate education than one might expect. So in the 1970's when the number of doctoral programs was curtailed, library acquisitions contracted more slowly. This is probably a reflection of the philosophy of investment in acquisitions as a long term strategy and is part of the "just in case" school of collection management.

Some of the conclusions reached in the Mellon report warrant restatement as they reflect some of the key factors affecting current resource allocation decisions:

. Although research library budgets have continued to grow they have not taken a larger percentage of their university budget and, in fact, the average percentage has shrunk.

. Materials and binding, as a percentage of total library expenditures, have remained relatively constant over the period but there is a significant shift within this component between books and serials.

. In the two decades from 1970 to 1990, the rate of increase of volumes added to research library collections more or less stopped, even though the number of books being published worldwide continued to rise.

. Serial prices have had the greatest single influence on library acquisition budgets and are at the heart of the current crisis situation.

. Serial prices have outstripped all other growth measures even in the period of greatest budget expansion, 1963-1970.

. The most expensive serials have shown the highest rate of subscription price increase.

. Salaries, as a percentage of total library expenditures, have declined over the past 20 years while other operating expenditures have increased substantially.

The trends outlined in the Mellon report are reflected in individual library experience as evidenced by the following chart that shows the major expense categories in the MIT Libraries for the fiscal years 1974 and 1994:

	1974	1994
Salaries	$ 1.748.500	$ 6.072.400
Employee benefits	316.700	2.364.500
Subtotal	2.065.200	8.436.900
Materials		
Books	304.000	898.000
Serials	454.500	2.430.000
Online services	29.300	390.000
Binding	57.400	181.000
Subtotal	845.200	3.899.000
Other operating expense	214.200	1.689.000
Total	$3.124.600	$14.024.900

This chart reveals the following changes over the 20-year period:

· The percentage of the budget devoted to salaries decreased from 56% to 43%. In fact, the total staff in the MIT Libraries is smaller today than it was in 1974 despite the addition of major activities in online information, automation, document delivery, archives, and remote storage. The percentage of the budget devoted to employee benefits has increased from 10% to 17% reflecting a number of trends: (i) inflation in the cost of health care; (ii) extension of retirement system to non-professional staff; (iii) reduction of cost recovery on government contracts. The total percentage allocated to salaries and benefits declined from 66% to 60%.

· The percentage of the budget devoted to library materials remained remarkably constant: 27% in 1974 and 28% in 1994. But the shifts within the materials budget itself are significant: in 1974 books represented 36% of materials expenditures; in 1994 it was 23%. In 1974 serials took only 54% of the materials line; in 1994 serials took 62%. Expenditures for online services grew by a factor

of 13 times over the 20 years as compared to 5.4 times for serials. This simply reflects the tremendous growth in the use of online databases like OCLC, FirstSearch, and Dialog.

The sixfold growth in other operating expense that now takes 12% of the total budget, as compared to 7% in 1974, is due in large part to costs associated with the application of information technology including telecommunications, equipment purchase and maintenance, and service contracts.

Trends in research libraries

When we set about to develop a strategic plan for the MIT Libraries in 1987 and 1988, we conducted an extensive survey of the intellectual and technological environment in which research libraries operate. The purpose was to develop a list of trends and directions that would be affecting library budget decisions over the following years. Now seven years later, most of what was on the list has become incorporated into library planning and budgeting. These trends both define the dramatic changes that have been and are taking place in research libraries and emphasize the difficulty of making rational and defensible resource allocation decisions.

Within the MIT Libraries and MIT in general:

. We will need to identify and respond to changing user needs. The exponential growth in both the number of formats and the quantity of information will require libraries to be more precise in structuring, marketing and delivering information services.

. There will be a growing emphasis on access to information and less of an effort to build comprehensive local collections of print and non-print materials. We will need to spend more of our budget delivering information directly to the end user, frequently in electronic form.

There will be an acceleration in the development of new information technologies and new information resources but much of this will be "in addition" to rather

than "replacement" for existing forms of research materials thus increasing the overall cost of library activities.

- The local campus network will play an increasingly important role in linking users with the research library and beyond.

- MIT education and research will change in a number of areas: (i) greater cooperation in both graduate programs and industry relations between the School of Engineering and the School of Management; (ii) continuing expansion and diversity of programs in the life sciences including the establishment of one or more research institutes separate from but closely aligned with MIT; (iii) a growing interest in and exploitation of distance learning; (iv) continuing change in the undergraduate curriculum particularly affecting the humanistic and social science components of the "core."

- Continuing pressure on the library budget from a variety of causes: (i) general inflationary increases for the operating and materials budgets; (ii) continued growth in the number of new serial titles and their introduction in new formats; (iii) the weakness of the dollar in Europe and Asia; (iv) the decline in government support of university programs including basic and applied research, undergraduate and graduate student financial aid, and grants.

- A necessity to reallocate resources within the library budget. There will be a steady movement of funds away from staff and collections and toward the support of automation, telecommunications, and contractual agreements for information access.

Trends among research libraries in general:

- Support of the concept of "the library as place." Libraries are viewed as rich learning environments for students, where information can be explored and where it can become transformed into knowledge. Libraries are seen as the "intellectual commons" - places for people to work individually, together, and with library and information professionals. Library buildings need to be adapted to meet changing technological requirements while retaining the qualities that promote study and reflection.

Libraries need to explore new methods of marketing services and communicating with their clients. Library users see the librarian as a navigator in the new electronic world and also expect the library to provide assistance and support in managing personal information collections. Despite the ubiquitousness and flexibility of electronic information technology, it will become more, not less, difficult to deal with scholarly resources. Training will have to be more sophisticated, more customized, and more relevant to individual abilities and needs.

Library staffs will be hard pressed to keep up with technological and other changes while maintaining traditional collections and services. New skills will have to be developed on the job and there will be more demand for leadership and organizational skills. Change will be a constant factor and staff will have to be educated in how to deal with and manage change.

Technology will both demand and provide for a large number of applications:

- After experience with partial online catalogs, most universities see the need to complete retrospective conversion of all bibliographic records.
- Hypercard applications can be used to provide better location and directional information.
- The development of an open systems interface will make the single scholar's workstation a reality.
- Campus networks will become a primary means for delivering bibliographic, full text, and numerical data to users.
- Libraries will see and respond to the need to expand online catalogs to include the contents of books and other materials in their collections[2].

Strategic planning and resource management

The resource allocation process is inextricably linked with planning. Strategic planning in libraries is a relatively new phenomenon and its wholesale adoption can be traced to the decline of resources available. In times of plenty such as the 1960's, planning

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was primarily incremental and even long range plans seldom existed except perhaps for library buildings. Most research libraries built budgets by addition and relied upon materials cost projections, publisher predictions, and user demand to justify annual increases for books, serials, and other materials - the primary portion of the budget other than salaries subjected to inflation. New academic programs created new demands and these were added to the library's wish list. The end of that era brought with it a demand for relevancy, restraint, and reallocation. Strategic planning provided an opportunity to define goals and expectations, to develop a methodology for reaching those goals, and to organize and reorganize to create the most effective organization possible. As a future-oriented system, strategic planning enabled - and required - managers to create a vision of the library of the future and then work backward in time to determine the strategies required to meet that goal. As Donald Riggs[3] has pointed out, there are clear contrasts between traditional planning and strategic planning:

Traditional	Strategic
Random planning	Systematic planning
Reactive decision making	Proactive decision making
Incremental evaluation	Synoptic evaluation
Goal-setting based on operational needs	Goal-setting based on the organization's mission
Isolated decision making	Team decision making
Decision making based on subjective evaluations	Decision making based on objective evaluations as a result of data gathered
Guessing results	Evaluating all possible outcomes

In the model for strategic planning adopted at MIT[4], the allocation of resources took place well into the third phase of the plan:

Phase I - Planning to Plan

  Define the plan

  Define goals

  Conduct an audit of institutional values

  Gather data

  Review the internal and external environment

  Review implementation considerations

Phase II - Strategic Design

  Build strategic models

  Design the future

  Plan for contingencies

  Analyze operational gaps

  Test for feasibility

  Select activities

Phase III - Implementation and Integration

  Design implementation strategies

  Allocate resources

  Set timetables

  Assign responsibilities

  Measure progress

  Review organizational structure

Phase IV - Evaluation

  Review implementation progress

  Evaluate effectiveness

  Begin new planning cycle

Resource categories and resource sources

The allocation of resources is difficult and complicated at best. What compounds the complexity is that in the research library environment we are dealing with more than one resource. While sooner or later everything does come back to the issue of money, library administrators also have to deal with the allocation of staff and space. For fiscal resources, North American research libraries have used the statistical data gathering system of the Association of Research Libraries as a means of categorizing budgets and expenditures.

A. Materials
    Monographs
    Serials including periodicals
    Other library materials (microforms, non-print, audiovisual, electronic, e.g. CD-ROM)
    Binding (commercial services)
    Online services (network fees, online databases)
    Miscellaneous (memberships, bibliographic utilities)

B. Salaries and Wages
    Professional. Nonprofessional. Students.
    Employee benefits.

C. Other operating expenses
    Equipment
    Travel
    Postage
    Service contracts
    Consultants
    Supplies

There are a number of other issues involved with money resources that need to be considered when making allocation or reallocation decisions:

. Are the funds recurring or non-recurring?

. Are there restrictions on the use of the funds, either donor or institutional?

. Do expenditures require annual or periodic increases, e.g. salaries, periodical subscriptions?

. Do funds have to be expended within a particular period of time?

The personnel in any library are its most valuable resource. When making strategic decisions, the strengths and weaknesses of individual staff members is a critical ingredient. Hard to measure characteristics like willingness to change, adaptability, flexibility, and leadership potential are key to the appropriate assignment of human resources.

Library space is often thought of primarily as it relates to collections and services. Equally, if not more critical in a period of budgetary constraint, is the allocation of working space. The cost of renovating and/or upgrading space to meet new technological requirements can be considerable. Also implicit in this area of resources are questions of equipment, furniture, telecommunications, lighting, and security.

For most research libraries the primary source of library funding is the general university budget. At MIT in the year that ended June 30, 1994, a little over 87% of the funds expended came from the central university budget. The remaining funds came from endowment restricted to the Libraries, gifts received during the year, grants, and income from the sale of library cards, from photocopying, and literature searching, from fines, and from the sale of publications.

Examples of funding decisions

General budget reduction

For the past three years, the academic part of MIT has been involved in a major budget-cutting exercise. The participants include the five schools - Engineering,

Science, Management, Architecture and Planning, Humanities and Social Science - as well as the Libraries, and the Deans of Graduate and Undergraduate Education. The Libraries were required to reduce general fund expenditures by 2% per year for three years; this was about $250,000 per year for a grand total of $750,000. The process of identifying areas and activities to be cut was long and arduous. Guidelines provided by the administration were few but we were encouraged to use the process to reduce the size of the work force. (A subsequent effort in the administrative areas at MIT is aimed at reducing that staff by 25-30%). The Libraries adopted a number of principles as guides through the process:

. First eliminate the work, then the positions.

. Avoid asking staff to work harder or faster; they are already doing that.

. Try to find activities that can be eliminated in their entirety.

. Maximize the use of library automation and information technology.

. If reductions are going to impact public services, make sure they are visible to the public.

. Make sure the administration is aware of the potential reaction from library patrons.

. Look for redundancy and duplication of effort.

. Aim for a high level of service but accept less than perfection.

During the first two years of reductions, we were able to identify a number of activities that could be eliminated or heavily streamlined. Through careful planning and the freezing of all vacant positions, we were able to reassign all staff affected by the budget reductions. In the third year, however, it became much more difficult to identify areas for reduction. In this budget year there will be a reduction in overnight hours that will have an impact on a number of library users. The rationale for making such a decision may be instructive for others:

"The rationale for this proposal (reducing overnight hours) is that it is the best of a series of bad choices. We feel we can not keep this service alive at the expense of activities that benefit a wider population. In addition, we believe that

the increase in library services available on the network coupled with document delivery options reduces somewhat the effect of closing."[5]

Reducing the serials budget

The MIT community depends heavily on periodical subscriptions for access to current research information. In fact, about 65% of the material budget and 17% of the total budget is devoted to subscriptions. In some fields, like chemistry, serials account for over 85% of materials expenditures.

In December 1994, the Libraries proposed its budget for the 1996 fiscal year (beginning July 1, 1995). It was estimated, based on all available information, that serial price inflation would be about 12% over the current year. The Libraries received, for FY1996, about half of the amount requested. In the intervening months, however, we have received additional information that leads us to believe that we will see an overall inflation of about 15%. It is clear that the MIT Libraries will have to undertake another serials cancellation project. Since 1983, we have cancelled almost 3,300 subscriptions with current dollar value of $700,000 and indexed for inflation at over $1,000,000. Of these titles, about 21% represented duplicate subscriptions, the remainder being unique titles. The process for identifying titles to be cancelled will involve a number of constituencies: members of the staff, department and laboratory heads, faculty, and staff in other libraries in the Boston Library Consortium. The final decision will be made by the library administration after review by the Faculty Committee on the Library System.

The plan for the serials review is as follows:

September, 1995

. Article in campus newspaper about the budget situation
. Letter to heads of academic departments and laboratories
. Libraries to set target percentages for each major subject area

Fall, 1995

- Librarians' discussions with department heads to plan departmental and laboratory participation
- Data gathering
- Prepare title and price lists
- Price increase history for each title
- List of Boston Library Consortium holdings
- Information regarding online full-text availability
- Information on document delivery availability
- Use data based on in-house circulation
- Citation data from *Science Citation Index*
- Interlibrary borrowing data
- Librarians prepare lists of titles to consider

Winter, 1995-96

- Review lists with faculty
- Revise lists
- Share lists with Boston Library Consortium

Spring, 1996

- Library administration reviews lists in light of budget situation
- Library administration makes cancellation strategy proposal to Faculty Committee on the Library System

Summer, 1996

- Vendors and publishers notified about cancellations

Allocating resources to access

Much has been made in the library press about the move of resources in academic and research libraries from the ownership of information to access to information. What motivates libraries to consider such a philosophy? In general, the rationale for looking

to the reallocation of funds is based on factors that are familiar to most everyone involved in these libraries:

1. the rising cost of library materials;
2. the decline in institutional support for libraries;
3. the increasing range of formats and forms in which scholarly information is being produced;
4. the equipment required to access information in a variety of forms;
5. the high obsolescence rate of electronic equipment used in libraries;
6. staff training required to service a variety of information formats;
7. staff reductions;
8. space limitations;
9. preservation and conservation requirements.

In addition, there are a number of future trends that have been identified that will affect decisions regarding access and ownership. Frederick Lynden of Brown University[6] has identified these as:

    Participation in the national network
.   Availability of all-purpose workstations
.   Expanded utilization of outside vendors or outsourcing
.   Multi-media publication
.   Use of gateways and other user interfaces
.   Expansion of document delivery capabilities
.   Low cost, high speed digitization in libraries
.   Electronic communication with information suppliers
.   Use of expert systems to navigate the network
.   Better management data available

Some of the advantages of access over ownership include the obvious savings in space and storage; the ability of the user to access the information from outside the library; timeliness; the ability to integrate accessed data into documents; "just in time" rather than "just in case" delivery. There are, however, some serious problems with the

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substitution of access for ownership: the cluttering of the network with unfiltered, non-refereed, random data; the volatility of cost when it is in control of the commercial sector; conservation and preservation of electronic information; the loss of control by libraries over their own collections; market driven availability that undervalues highly specialized information; obsolescence of equipment needed for access and telecommunications; whether this is a zero-sum game or whether there are additional, possibly hidden costs involved; and, finally, but not least, copyright.

Making decisions about technology

A recent article in the *Chronicle of Higher Education*[7] addressed some of the issues involved in making wise investments in technology. While focused primarily on academic computing rather than libraries, the authors made a number of points that should be factored into library decisions on hardware and software. Adapted for libraries these include:

. Beware of inflated promises of financial savings accruing from technology investment. Recent history has not demonstrated that information technology in itself has saved libraries any money. We have tended to underestimate the short- and long-term costs of library automation and, while we have been able to reap some staff savings, this has often taken much longer than originally anticipated.

. Be sure that estimates include software as well as hardware, and staff training as well as installation. In addition, there is sure to be a cost associated with training users and assisting them when problems arise.

. Are the funds being allocated to technology the highest priority for the institution at this point? What is the political fallout from installing new technology in a time of fiscal constraint? Will users see this as an appropriate decision? Can you, as the administrator, successfully explain the decision?

. Decisions made in haste are often the wrong ones. If someone offers you something that is too good to be true - it probably is!

. Make sure that there is a clear understanding of what the technology will do and who will benefit from it. Be realistic about the benefits and make sure there are ways of evaluating the program and measuring its effectiveness.

. Build the full costs into your budget including maintenance and replacement.
. Prepare a plan to publicize and market the service before it is installed.
. Proceed slowly and carefully. Consult widely and be prepared to revise or even scrap a plan if it does not fulfill a real need.

Conclusion

Decisions on the allocation of resources in research libraries inevitably lie with the senior administrator. In days gone by when resources were plentiful these decisions were relatively easy to make and mistakes were hardly fatal. In the current environment characterized by limited and diminishing library resources, by a high level of competition for available funds, by down-sizing and cost benefit analysis, and by a proliferation of simplistic solutions to complicated problems, the process is infinitely more difficult. Strategic planning is essential, as is having a good sense of history. In the end, what we hope to attain are better utilization of scarce resources and the creation of a better environment for library service.

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