MANAGEMENT INFORMATION SYSTEMS IN SOME ACADEMIC LIBRARIES IN INDIA

Management Information Systems in Some Academic Libraries in India

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Abstract – This paper examines the potential and actual use of computer generated information in decision making by academic library managers. It begins by discussing some of the contemporary issues in Indian higher education which are compelling library managers towards establishing a more formal planning process and towards making more systematic use of information in their decision making, especially in resources allocation and service evaluation. It considers the general features of Management Information Systems, particularly automated systems, and reviews the general development of automated library systems in Indian academic libraries. It then examines the current state of development of Management Information Systems in some Indian academic libraries. The results of the survey showed that automated Management Information Systems are not widely available to library managers. Only two of the sixteen libraries made much use of their library automation systems for management information.

Problems to be overcome include the crude form of data provided by existing automated library systems, a lack of agreement on what data is required for management purposes, and a lack of expertise on the part of library staff in interpreting data. The cost of establishing Management Information Systems and the absence of Management Information systems in the parent institutions had also inhibited their widespread adoption by academic libraries. However, it appears that the introduction of Management Information systems poses no threats to library staff, because most libraries already have a 'flat' management structure.

Key Words : Automation, Academic Libraries

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INTRODUCTION

Without proper information, library managers will always face some difficulty in decision making. The application of management information, in particular that derived from automated systems, has a potentially important role in relation to current problems faced by libraries. Management information has been available to librarians for a long time, based on manually compiled records, but libraries have not always had access to computer generated information.

Consequently, the potential of Management Information Systems has lain hidden. By the late 1980s, however, most academic libraries in the India had computerized the main library operations. The first part of this paper considers the growing importance of a formal planning process in library management. Next it discusses the relationship of the library planning process and Management Information Systems, and describes how computer systems can be used as a tool to produce management information. It then goes on to review the development of automated library systems.

ACADEMIC LIBRARIES AND THEIR MANAGEMENT

The higher education sector in India comprises universities established over the last seven hundred years, including a number designated during the last phase of expansion in the mid-1980s, and those institutions which were mostly redesignated as universities in 2004.

In particular, academic library managers needed to use a more formal planning process to focus their services on meeting users' needs. Sparrow illustrated the planning process as:

☐ Establishing overall objectives

☐ Allocating library resources to programmes

☐ Evaluating attainment of objectives.

McClure provides a detailed rationale for the planning process: 'In the times of economic difficulties for many academic libraries, the need for a planning

process takes on significant importance in six general areas.

First, planning provides for a rational response to uncertainty and change. Although the organization cannot control its environment, it may be able to manipulate it - assuming there is an objective to be accomplished.

Second, planning focuses attention on goals and objectives. Does your organization have a written set of goals and objectives? If not, dysfunctions, departmental competition, and ineffective resource allocation are likely.

Third, planning is important as an aid to resource allocation by establishing priorities for funding. Which services can be provided at the least cost and for the most benefit?

Fourth, planning also serves as a basis for determining individual, departmental, organizational, or program accountability.

Fifth, planning facilitates control of organizational operations by collecting information to evaluate the various programs or services.

Finally, planning orients the organization to a futuristic stance. Instead of always reacting to problem situations, the organization attempts to foresee and mitigate against future problems before they become crises.'

ORGANIZATIONAL STRUCTURES AND INFORMATION FLOWS

An organizational structure is a means to incorporate various functions in order to pursue some predetermined objectives. Organizational structures also provide the lines along which information flows.

Departmentalization means the organization is structured horizontally by identifying and grouping similar or related required activities or tasks into departments, for example, function, activities, geography, subjects, form of material, etc. There are two main approaches to departmentalization within academic libraries, function and subject, and they are matters of continual debate. The first approach is a structure dominated by administrative function. The subject divisional library is the alternative approach to the strictly functional.

It could be speculated that the implications for the development of Management Information Systems (MIS) in libraries with 'flat' management structures may be comparable to the general problems of introducing MIS in small organizations:

DECISION MAKING, ORGANIZATIONAL STRUCTURES, AND INFORMATION NEEDS

Whether organizations are large or small (or 'flat'), there is managerial stratification. The tasks of top management are development of the organization's domain, management of the interface with external environments and establishment of the organization's administrative climate; middle management develop rules, procedures and policies for day-to-day operations; and technical management sees that services are rendered and policies carried out.

In a conference on Management Information Systems, Brophy identified the library staff with each of these management levels as follows:

☐   Senior/top managers (e.g. deputies and chiefs).

☐   Middle managers (e.g. heads of major divisions)

☐   Line/technical managers (e.g. service desk superintendents).

He also commented that, 'some individuals will straddle more than one category. Deputies, for example, will be concerned with middle management (in terms of day to day operations) and senior management (in terms of strategic planning). Furthermore the model is generalized, and it is true that in smaller libraries such stratification may break down since everyone is doing a bit of everything!'

INFORMATION NEEDS AND PERFORMANCE MEASUREMENT

Performance assessment is the systematic measurement of the extent to which a library has achieved its objectives in a certain period of time. Performance assessment can be applied in libraries, in the contemporary Indian terminology, to: service input cost measures, service output measures, service effectiveness measures, and service domain measures. Internally, performance assessment is concerned with making the library work efficiently and effectively. Externally, it can be used by library managers to justify the budget to the parent body.

MANAGEMENT INFORMATION SYSTEMS

The implementation of performance assessment in academic libraries, according to Lines, is an essential part of good management practice. Although she had reservations about the current Management Information Systems in university libraries because, for example, few academic libraries had produced a statement of their objectives, she still believed that Management Information Systems could contribute to effective management of library activities.

The four main objectives for Management Information systems have been defined as:

1. To facilitate the decision making process in the library by providing the managers with accurate, timely, and selective information that assists them in determining a specific course of action.

2. To provide for the objective performance measurement and assessment of selected relevant areas of the library. The areas are to be determined during strategic planning.

3. To provide pertinent information about the library's internal and external environments.

4. To provide information on alternative strategies and contingency plans.

The purposes above can only be implemented if people look upon Management Information Systems as an integral part of the framework of management in the academic library and not as a peripheral system which has been installed for the benefit of an individual or a single department.

An integrated Management Information System is very important because it can be used to provide supporting information to determine:

1. Efficiency; is the library doing things right?

2. Effectiveness: is the library doing the right things?

3. Competitiveness: is the library heading in a direction which is consistent with the environment (that is, does the library has a strategy, and is it certain that it is the correct one)?

Any discussion of the Management Information System must lead to consideration of the inputs data, processing data and the outputs data. Inputs to the management information system consist of both internally and externally generated library data. External information covers factors such as legislation, politics, trends in society, changes in technology, user demand, and comparative statistics for other, similar institutions. Internal data is that derived from administrative routines and transactional information. Administrative routines include those related to personnel, finance, acquisition, cataloguing, processing of materials, binding, building services, maintenance services, etc. Output measures will include data of circulation, general user satisfaction, etc. All service points will need to be monitored so that internal performance comparisons can be made and the contribution of each service point are the overall objectives of the organization assessed.

In term of library managers' needs, a variety of inputs is evidently needed. It may be necessary to process information in different ways for different levels of decision-making needs, and different types of output reports will be needed to meet those different needs. Selection of appropriate data elements for inclusion in a Management Information System assumes that:

1. Clear goals and measurable objectives have been developed for the library,

2. for each data element there is rationale for how it will be used or in what combinations with other data elements it can be used to determine success toward the accomplishment of objectives, overall library effectiveness, or performance measures for specific library services/operations, and

3. The library can, in fact, collect reliable and valid data for a particular data element.'

The data in a management information system also needs to be processed to turn it into meaningful information for library management.

Computers should be easily able to provide four types of report: periodic reports, exception reports, on demand reports, and predictive reports.47 Periodic reports provide routine, statistical information in detailed or summarized form.

Exception reports highlight areas requiring managerial attention and would focus on those that have been overlooked. On demand reports provide a response to a particular nonstandard question. Predictive reports give forecasts and provide comparisons based on statistical manipulation of data.

The principal requirement of the outputs of academic library management information systems is that they should be of interest to:

1. The relevant committee - the members wish to know how the library service is performing and whether the institution, is getting value for money.

2. The chief financial officer - his role is primarily custodial, and he wants to be assured that there is no overspending and that money is used for the purpose intended.

3. The chief librarian - who wants to know how services under his control are performing in accordance with plans, targets and budgets.

4. The managers of individual sections or services - who want to have data on the operations and performance with plans, targets and budgets.

5. Outside organizations requesting library performance data on a regular basis.

MANAGEMENT INFORMATION SYSTEM VS. DECISION SUPPORT SYSTEM

Adams identified five major problem areas of management information systems. They are:

1. Output is undiscriminating

2. The information is not analyzed for a purpose

3. The data lacks integration

4. The system is not user-friendly

5. The information which is given by MIS may not be acceptable.

LIBRARY PLANNING AND OBJECTIVES

All the libraries had produced a statement of their mission, medium-term plans, and specific objectives or targets. One library operated on a planning cycle of three years, and the others on five years. Thus, this was a common management activity, with the potential for providing guidelines for resources allocation, and a basis for management information systems.

OPINIONS ON DECISION SUPPORT SYSTEMS

Libraries which had formal management information systems found that the management information produced by their system needed to be carefully interpreted; moreover, the management information systems were not pro- active. Therefore, their aim was the introduction of decision support systems in the near future. Those libraries which had only informal management information systems saw that they had the choice of establishing either a formal management information system or a decision support system. They indicated that they were more likely to favour decision support systems.

All of the librarians interviewed were aware of the nature and potential of decision support systems, and saw them as particularly helpful in utilizing performance indicators and developing quality assurance processes in the library. One library was already experimenting with a decision support system and performance indicators, and three were aiming to have one. One librarian, however, had no intention to have a decision support system, as he felt that it could assume too much control, as well as being very difficult to establish. However, all were agreed that decision support systems are more reliable than management information systems.

Nevertheless, in terms of infrastructure for decision support systems, little progress was evident. Only one library had a microcomputer based network, and one other was preparing to have one.

USE OF AUTOMATED SYSTEMS FOR MANAGEMENT INFORMATION SYSTEMS AND EFFECTS ON DECISION MAKING

All of the libraries visited already employed automated systems. However, formal and relatively fully automated management information systems existed in only two of the sixteen libraries visited. They had been established because of the existence of management information systems in the institutions as a whole. In the other libraries, the use of cost centres for resources allocation caused the libraries to have some formal management information. Libraries generally are not fully utilising the capability of their automated systems since some external information remains in printed form, and manual data processing is still a significant element in their analysis of the data available.

BARRIERS TO THE DEVELOPMENT OF MANAGEMENT INFORMATION SYSTEMS

There were several reasons why many of the libraries visited lacked management information systems. The criteria of an ideal management information system are that:

☐ They must be inexpensive to operate

☐ They must not interfere with existing services

☐ They must provide reproducible results.

The fact that some libraries claimed to have only 'informal' or 'partial' management information systems or to have no management information systems does not mean that they had no collection of external and internal data. They do collect and use information for establishing library objectives and priorities or for resources allocation, but they have not formalized their management information systems, typically because their institutions had not required them to do so.

SUMMARY AND CONCLUSIONS

The contemporary approach casts academic librarians as managers within the higher education system. Planning and controlling development is clearly an important aspect of that role. Academic libraries' objectives have become clearer than in the past, but Indian academic libraries' attempts to achieve those objectives have been threatened by government financial policies which, in effect, require academic libraries to provide more and better services with less money. Consequently, every aspect of academic libraries' operations has to be reviewed so that they can be managed more effectively and efficiently. It is not easy to achieve this because academic libraries are complex organizations.

From the survey, it is clear that most library managers are very concerned with the need for management information about their libraries. Libraries have generally established objectives and forward plans; there are still differences in how they allocate resources to fulfil those plans, and clear divergences of opinion on what information is required for library planning and resources allocation. Changing circumstances may call for any aspect of libraries' resources and services to be reviewed, or for them to be considered from a different perspective, often pro-actively or at fairly short notice, and the advantages of a comprehensive management information system should be self-evident. Similarly, although at present there is much data collection, formal evaluation processes are not common. Performance measures which can compare internal and external information have not been widely utilized and have made little impact in decision making, perhaps because there is no agreement on what constitutes appropriate measures of achievement.

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