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Academic Libraries and Management Information Systems In Sri Lanka

D.C. Kuruppu

Abstract
The potential of MIS in academic libraries is examined, with particular reference to the academic libraries in Sri Lanka. The conclusion of this study is that MIS in libraries must respond to the needs of library managers, especially their role in determine efficiency, effectiveness and competitiveness. Recommendations are that:

- *Managers need to be trained in relevant skills (computing, statistics) so that efficient MIS can be established. Curriculum in library schools should address this need.*
- *Senior managers need to demonstrate serious commitment to promoting and maintaining efficient MIS.*

Introduction
Management information systems (MIS) operate within the technical subsystem of libraries and they are relevant to the management functions of communications, decision-making, planning, controlling and performance measurement. They often reduce the time taken to perform certain tasks, allow other tasks to be executed which previously would have been too time consuming, and generally improve the standard of reporting mechanisms.

library managers. Hence, to design MIS based on managers' actual needs rather than data which is available in the system, it is important to identify the management information needs, in terms of three levels of management: operational, tactical and strategic. Each of these has its own unique management information needs.

Management Information Systems in Academic Libraries
The application of MIS has a potentially important role, which relates to current problems faced by libraries. Management information, which is based on manually compiled records, has been available to librarians for a long time, but libraries have not always had access to computer-generated information. Hence, the potential of MIS has been hidden (Gumilar & Johnson, 1995).

Hamburg et al. (1974), cited in Brophy (1986:85), define the role of MIS in a library in the following way:

> "[The] information system is the cement that binds together the various elements of a library's organisation with one another and with the library's objective of serving its clientele. This

ILIG Informals

Dates for your Diary

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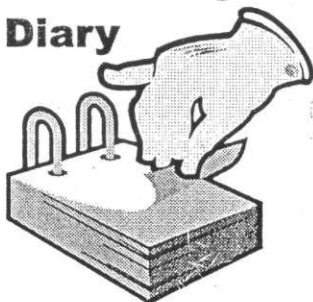
Place: CILIP, 7 Ridgmount Street, London WC1 7AE.

Time: 6-7 p.m.
Dates: see below and enter into your diary, personal organiser, etc!

1. Following the Annual General Meeting on 20 February, Grace Kempster reported on the British Council: *Where knowledge and Learning Connect.* An outline of her talk is on page 32.

2. On March 20, Ruth Rikowski spoke on the *WTO/GATS Agenda for Libraries.*

3. On April 20, Simon Francis discussed his experiences in Siberia.

4. May 15. Victoria Richardson will talk about *Healthlink*

5. June 19. Carol Priestley.

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heading in a direction which consistent with the environment (that is, does the library have a strategy, and is it certain that it is the correct one?)

This is a clear definition of the role of MIS. Lines (1989) points out that MIS could contribute to effective management of library activities. Hence, to introduce MIS it is necessary to define their objectives. Riggs (1984) defines four main objectives for MIS:

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 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.

As a result of the establishment of MIS in libraries, it provides supporting information to evaluate library progress. Bryson (1990) has stated that the use of MIS is very important because it can be used to provide supporting information to determine:

◆ Efficiency: Is the library doing things right?
◆ Effectiveness: Is the library doing the right things?

The MIS consist of both internally and externally generated library data. External information covers factors such as legislation, policies, and trends in society, changes in technology, user demand, and comparative statistics for other similar institutions. Internal data is what is 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 about circulation, etc. (Gumilar & Johnson, 1995). The sections of appropriate data elements for inclusion in a management information system are important factors as Millerchief (1990) suggests:

1. Clear goals and measurable objectives developed for the library.
2. For each data element there is rationale for how it will be used to determine success towards the accomplishment of objectives, overall library effectiveness, or performance measures for specific library services/operations, and
3. The library can collect reliable and valid data for a particular data element.

However, the data are processed to turn them into meaningful information for library management. So, it seems that an appropriate data

processing means the capture, storage and processing of data for the purpose of transforming useful information for decision-making. Now, it is easy because data processing for MIS is being undertaken by computers (Ahituv, Neumann & Riley, 1994) and computers should be able to provide four types of reports: periodic reports, exception reports, on demand reports, and predictive reports. Here, periodic reports provide routine, statistical information in detailed or summarized form. Exceptions reports highlight areas requiring managerial attention and focus on those that have been overlooked. On demand reports provide a response to a particular nonstandard question. Predictive reports give forecasts and provide comparison based on statistical manipulation of data (Hawks, 1988).

The concepts of MIS in the library involve input resources, transformation processes and outputs. Whilst the input resources regard financial resources and the staff, the transformation processes contain all the library activities including staffing and administration as well as the traditional library activities. The efficiency of outputs can be measured against the needs of the library's client population and the efficiency of the library can be judged by measuring outputs against inputs. Generally, data flows to the library managers from these three sources. The library managers measure and assess performance data against the library standards, the achievement of set goals, and feedback in the form of

decisions. The feedback will indicate adjustments to be made to the allocation of further resources, collection management, etc. (Cullen, 1990). Braisby et al. (1987) point out that the information on outputs of academic library MIS should be made available to the authorized persons in the library and the relevant committees inside and outside of the organization. The members of the relevant committees in the parent organization need to know how the library service is performing and whether the institution is getting value for money. As the chief financial officer's role is primarily custodial, he wants to be assured that there is no overspending and that money is used for the purpose intended. Indeed, the chief librarian needs to know how the services under her/his control are performing in accordance with plans, targets and budgets, as well as the managers of individual sections or services who want to have data on the operations and performance for which they are responsible, probably in more detail than the reports prepared for general management use. Outside organizations request library performance data on a regular basis. It seems that the outputs of MIS become information for decision-making. Therefore, management information is the correct information in the correct form at the right time to do a manager's job effectively and efficiently, as Bee & Bee (1990) suggest. The value or quality of management information can be determined by three factors. These are: the content information; the form or presentation of the information; the timing of the presentation (Lucey, 1989).

Cullen (1990) presents a conceptual model of a MIS, which represents the information flow through the organization. (See figure 1). It incorporates strategic planning and the setting of goals and objectives, the establishment of appropriate performance measures, the-use of accounting procedures and transactional processing to provide management information, and a decision support system which is based on a micro computer integrated with the system. Here, it is clearly shown that summarized data information is measured against objectives and performance measures, and the information is integrated at information processing level. In addition, environmental information, policy decisions of the parent body, which will affect the library operations, and the library goals, are also taken into the system. Management decisions are in return conveyed to points in the organization. If they need adjustment, reinforcement or reappraisal, the organization can better perform as set out in library's goals and objectives. However, all data flows originate in the bibliographic database. It seems that the library organization is an organic whole, with information as its lifeblood.

Decision Support Systems in Academic Libraries

Decision support systems can be seen as an extension of the idea of MIS to provide a wide range of information in a more flexible and interactive way and external or internal data concerning the library can be entered in it. The system solves a major problem of MIS, that is, the poor communication between the users and library managers. There are three levels of influence on decision-making as follow (Adams et al., 1991):

♦ Information from the library's operations
♦ Information from the parent organization
♦ Information at the national and regional level.

The difference between a MIS and a Decision Support System (DSS) lies in their features and users. Whilst MIS tend to be used by lower and middle management, DSS tend to be more useful to top management because they can help with decisions on unstructured issues (Bryson, 1990).

A DSS integrated with a MIS can help the library manager to make the best use of the data generated by the library's automated system, as well as offer support in exploring the impact of inflationary trends, or different financial strategies, on the library's performance. DSS in libraries can be developed on microcomputers using database management systems, and spreadsheets (Cullen, 1990).

Use of Management of Information Systems

Librarians as well as computer centre managers are the major resource managers within any academic institution. They have a growing need to know and to quality what is happening within their systems. Librarians are under great pressure to ensure that the limited financial resources available to them are spent effectively, and to be able to show the institution that they are being spent effectively. In fact, information is needed to meet its objectives in a cost-effective way. This has been
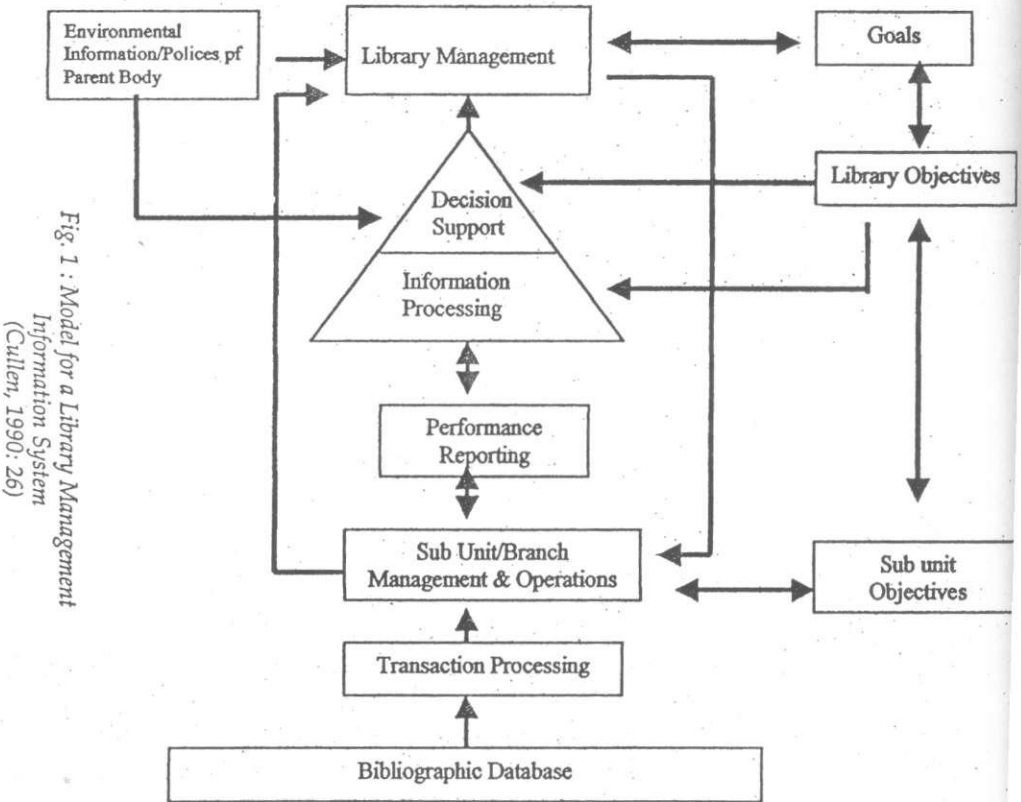
Fig. 1 : Model for a Library Management Information System (Cullen, 1990: 26)

associated with attempts to develop performance indicators and output measures for libraries. Mackenzie (1986: 317) observed that "It may be that a measure of austerity is beneficial in that it encourages creative thought and more effective management."

In particular, academic library managers are required to use a more formal planning process to focus their services on meeting user's needs. The planning process is illustrated by Sparrow (1988) as follows:

- ◆ Establishing overall library objectives
- ◆ Allocating resources to programmes
- ◆ Evaluating attainment of objectives.

A detailed rationale for the planning process can be described with six general areas as McClure (1978) points out because many academic libraries are now in economically difficult times. These are

1. Planning provides for a rational response to uncertainty and change.
2. Planning focuses attention on goals and objectives.
3. Planning is important as an aid to resource allocation by establishing priorities for funding.
4. Planning also serve as basis for determining individual, departmental, organizational, or program accountability.
5. Planning facilities control of organizational operations by collecting information to evaluate the various programs or services.
6. Planning orients the organization to a futuristic stance.

All academic library managers must negotiate the library's resource requirements through various supervisory committees. To support their claims, academic libraries need clear information, which can be presented to these committees about how effectively the libraries contribute to the objectives of the parent institution. Payne and Willers (1989; 21) explained this as follows:

"Libraries are required now to develop services which can be targeted at different groups based on their own needs. The changing demography of higher education argues for a careful and continuing monitoring of such factors as the profile of the student population, measurement of library use by identified subgroups and experimentation with new services and assessment of their impact."

The difficult decisions required of library managers in the current climate of financial restraint, demands for new services and financial accountability, point to a need for better management information on which to base those decisions. This information must itself be managed, and MIS offers the best solution to the problem. MIS should provide for the information needs of decision makers at all levels in the library organization. It brings together the key management functions of the library manager and decision maker such as planning, monitoring, and controlling. The systematic provision of information for decision-making will enhance the decision-making capabilities of the library manager. Flexibility in information needs is answered by a decision support system (Cullen, 1990).

Automated Systems and Management Information Systems

The introduction of computers into academic libraries was largely in response to the problem of increased workloads with fewer staff and they are now able to handle easily most of the routine and repetitive work. In addition, they have capability to enhance the provision of management information, since automated data processing is able to present reports more accurately and

much faster than manual systems (Gumilar & Johnson, 1995).

Automation allows easier collection, manipulation and transfer of quantitative data. There is no need for lengthy and time-consuming data preparation of records before they can be manipulated to provide useful information (Payne & Willers, 1989). The many reports produced by automated systems will be the most useful in managing both the library and the system. Librarians need clear, better information for planning, managing resources, and evaluating library procedures and programs. In fact, this information is usually readily available from automated systems. The data produced by such system is not truly information unless it is produced in a form that is useful for decision-making. So, the data must be summarized, tabulated or produced in such a way as to be useful and available to managers. The automated systems are capable of being information-oriented as well if libraries can express their information needs more clearly. Automated systems allow monitoring of data in each department such as circulation, acquisition, cataloguing etc. These data allow for fund allocation, creating policies, change of workflow, assignment of staff, material allocation etc. Some management information, such as records on interlibrary loans, outline searches and cost, use of CD-ROMs, and the impact of reader education on the number of inquiries at different levels, will be generated by records systems. This information is not yet incorporated into the library's automated system (Cullen, 1992) but will eventually be needed for decision making in the well-run academic library.

The development in automated library applications has become such that the technical knowledge required for intelligent decision-making is well within the capabilities of virtually every library manager. However, the new technology has created a challenge for management that has taxed planning and decision-making skills (Montague, 1993).

Academic Libraries and Management Information in Sri Lanka

In Sri Lanka, there are thirteen universities and nine institutes affiliated to these universities functioning under the University Grants Commission (UGC). Some of them have just been established in various parts of the country.

All the universities have been slow in introducing information technology to their libraries, the reason being the financial constraints and the lack of personnel qualified and trained in information technology application in libraries. When considering the management system, no one particular system is used. The transactional data on all activities such as daily borrowed, fines, overdue notice sent, orders placed, ordered received, invoices certified, payments made and book catalogued, are still processed manually. Some operational data, such as a payment made, integrate with the financial data produced by Finance Department in the university. Annually, reports are generated including all the statistics, which provide some measurement of activity or utilization.

In the libraries, there are two kinds of management information such as formal and informal, which are

information technology move up the management structure. On the other hand, there is also an opportunity for library schools to contribute at the professional level by including subjects such as management information systems and library service evaluation in their curriculum.

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and urgent problems to academic library services. In particular situations, information is required to assess the adequacy of collections, study places, and usable space to meet growing demands.

Generally, funds allocated to libraries in universities are not sufficient to purchase library materials to cater to the needs of increased number of students and the new courses. At this point, librarians have to exhibit the real problems to their parent organization. It is important to submit the report on estimated expenditure to their parent organization with the relevant reports to justify this.

Based on academic libraries in Sri Lanka, it seems that the libraries do not use management information for their key management functions such as planning, monitoring and controlling. The librarians are concerned with the need for management information about their libraries. The library has generally established objectives and forward plans. But, there are still differences in how they allocate resources to accomplish those plans, and clear divergence of opinion on what information is required for library planning and resource allocation.

Conclusion and Recommendations

In Sri Lanka, management information systems may not appear to have been widely incorporated into the management process arising from the fact that many librarians do not have a background in statistics or computing. Hence, this imbalance will eventually be redressed as

information is more often found externally. The user groups should feed back informal information on user attitudes and changes which are likely to affect demand for library services (Brindley, 1990). The information is needed in planning and management decisions on three levels of management: operational supervisors, middle management, and senior management. As an example of the above, one of the best-known outcome of the Lancaster project about the management information and the variable loan policy, cited in Ford (1987), policy decisions for loan periods have been made by some performance measurements such as satisfaction level and collection bias. But these types of measurement are impossible at the current situation of Academic Libraries in Sri Lanka. This is because required management information is difficult to collect for these tasks. As an example of the above, the policy decisions for loan periods and so on are kept on without any change.

In libraries, there are common management activities such as finance management, staff assignment, collection management, evaluation process etc. Libraries achieve their objectives by performance assessment such as service input cost measures; service out put measures; service effectiveness measures. The results are concerned with making the library work efficiently and effectively. In the last few years in Sri Lanka, universities have introduced new courses and an increased