Strategic Planning for U.K. Libraries

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Abstract

As a result of work carried out on the Dynamics of Inter Library lending, a new model to aid strategic planning at the national level has been developed. Further development and investigation are necessary to bring this project to fruition resulting in a tool capable of aiding policy formulation and assessment in the economics of the national system.

Introduction

Libraries can be categorized as special, academic, public, or national according to the user population they serve.

Special libraries are the most diverse, including industrial libraries of all sizes as well as those of government departments and learned socities. Because of their lack of central organisation special libraries are not treated in any depth in this study. Academic libraries and public libraries, although run by local authorities or apparently autonomous bodies, are ultimately controlled legislatively or financially by central government in the person of the Secretary of State for Education and Science.

The various national libraries in Britain, excluding the national libraries of Scotland and Wales, were reorganized in 1973 into three major divisions of a single new body, the British Library. Of these three divisions, the one of central interest is the Lending Division (BLLD), which connects the other U.K. Libraries in the most successful interlending network in the world.

Traditionally, lending between libraries has been organized by geographical regions, each centred on a large public library. Requests were circulated

within a region either speculatively or by means of "union catalogues",
i.e. lists of items held in stock by all cooperating members of the region.
In the case of unsatisfied requests, inter-regional lending would take place,
frequently with the aid of the union catalogues of the National Central Library.

In contrast to this, the National Lending Library for Science and
Technology (NLL) set up in the mid-1950s, operated a direct service to member
libraries from its own stock. Although the idea of a central back-up library
was not new, the type of stock was. It had generally been advocated that in an
efficient system local libraries would keep the most heavily demanded material
and any back-up library would hold the lesser-used items; NLL changed this by
offering a service based on the highest demand category. BLLD was formed by
amalgamating the National Central Library and NLL and its policies are a
continuation of NLL'S.

The present line of investigation has grown out of several strands of work
done on the original project which was restricted to interlending, ignoring other
features of the system. At an early stage it became obvious that the generality
of the model used allowed it a great range of adaptability, representing any two
interacting library systems - individual libraries, regions, academic, special,
public or national. The possible utility of such a model would appear to extend
much further than a simple concentration on the interlending process as such.

Readily apparent limitations of this model were the important budgetary
and staffing sectors which were initially considered implicit rather than being
explicitly modelled. Within these limitations it was possible to simulate
changes in budgeting and staff allocations as exogenous inputs in the form of
reduced acquisition rates and altered transaction times. Nevertheless, more
explicit modelling was needed and recourse was made to queuing theory, based on
average times for various processes in the face of different demand levels.
This proved unsatisfactory for several reasons, one of the most important being
the difficulty of incorporating an essentially static form of calculation into a
continuous simulation. Eventually this particular approach was abandoned.

Experiments were performed with different demand patterns to assess the
system's response. Seasonal variation is particularly common in academic
libraries, but two factors at the national level reduce its impact - as academic
libraries account for about one-third of BLLD loans total borrowing has a smoothing

effect on the pattern; system intertia in the national system caused by the high level of stock effectively dampens sharp fluctuations. The real effects of uncertain and variable demand are felt only in relation to a small proportion of the total stock in the system and many OR studies have been undertaken, mainly with regard to journal collections, attempting to identify the most productive journals most affected by these variations.

The Model

Based on an earlier simple interlending model an extended version, modified to allow a wider range of policy testing, has been constructed. The activities modelled are staffing, acquisitions, borrowing and returns, discarding and inter-lending.

A main feature of the model is the hypothesis that there is, for one reason or another, a decline in usefulness throughout all published literature which follows a recognizable distribution pattern (here taken as exponential decay). The exact pattern of unproductiveness is immaterial, as any suggested distribution may conveniently be substituted. For convenience this distribution has arbitrarily been divided into two segments representing decreasing degrees of utility of the titles in each class. Such a broad view of utility includes what is usually referred to in librarianship as obsolescence, but take this further to mean titles destined to remain unused because of quality, quantity or reader interest. There is, thus, an ideal proportion of all current publications for a library to aim to acquire - in practice librarians, within their budgetary constraints, will always try to maximise the proportion of class 1 titles purchased.
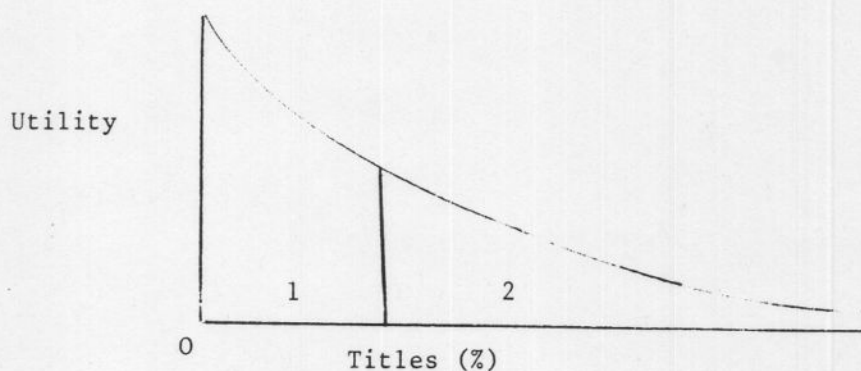
The actual order rate for each class of title is the proportion bought as determined by acquisitions policy plus a fraction of unowned titles requested by readers. These proportions in themselves define the classes as percieved by librarians, with higher weighting given to class 1 than to class 2.

As this measure of usefulness includes obsolescence, titles after acquisition will be expected to obsolesce according to the divisions shown; i.e. class 1 titles will obsolesce to become class 2 - lowest category of use.

The suggested curve represents usefulness of the total literature and, therefore, represents the stock of a monolithic, all-acquiring, library or, its closest approximation, the total distribution of titles at the national level. Growth in demand on BLLD can largely be explained in terms of increasing awareness of availability of potential requests by users of libraries. Those who are aware of the whole national system and exploit it are in fact not requesting items from their own libraries limited stocks, but from the national total stock.
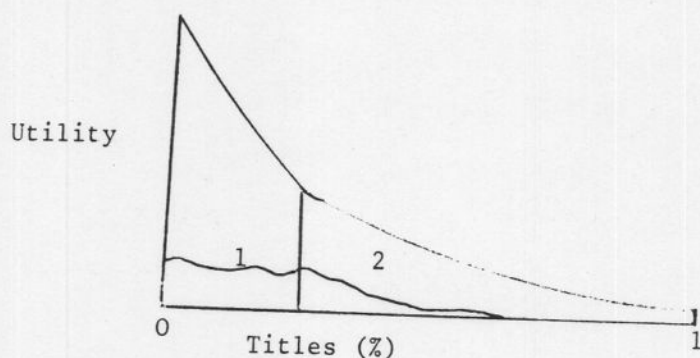
The lower curve is a typical individual library's holdings assuming an effective selection policy. Users aware of total resources are modelled as borrowing from the ideal curve rather than the lower one.

Total requests is a time-series which can be fitted to any observed or hypothesized trend. In turn this is divided into two categories each respectively covering requests for the two classes of item already mentioned. Within each category requests split into owned and non-owned titles; owned titles requested into those immediately lent and those already on loan. Borrowing rate is those requests immediately satisfied plus requested titles recalled from loan which arrive back within a maximum time limit laid down by policy. Recalled items which do not arrive back at the library within the time limit are assumed to become interloan requests.

The number of requested items not owned is determined by a multiplier, illustrated in the following curve, based on

Titles owned/Total no. titles published
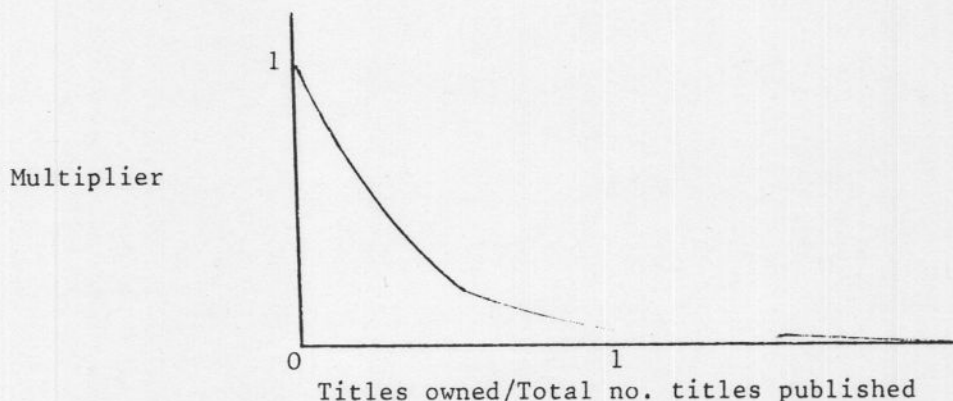
the probability that a library will have a particular title of a specified class in stock.

Interloan requests are generated by those titles not immediately available when requested and the policy decisions whether to buy, recall or borrow to satisfy the request. In this model interloan requests are the output of one unit - United Kingdom libraries - and the input (replacing total requests) to the second unit - BLLD. Similar units may be reproduced and repeated to represent any interlinked structure desired. At this stage it is confidently anticipated that a two unit model as proposed will be adequate.

The budgetary sector relates activities in the acquisition and borrowing sectors to staff levels. Total spending consists of salaries, book purchases and overheads, which for convenience is taken to include everything not in the other two categories.

Staff are divided into professionals and auxiliary staff and are generalized as three broad activity groups. The first is processing including ordering, acquisitions, binding, cataloguing and classification. Gategory 2 is exploitation, including bibliographic and readers services, subject specialists, counter staff and request services. Because this project is geared towards interlending the third staff group is that engaged in interlending. Although this is disproportionate attention when compared numerically with the other two groups, it is precisely because of the importance of interlending to this study that this particular group is highlighted. Any other small group could similarly be focussed on in future studies e.g. binding.

Processing staff levels are determined by average acquisitions over each
recruiting period: here taken to be one year. A policy variable specifies
the manpower in each sector based on average acquisitions, average requests and
transactions and average interloans. For the ten year simulation, average staff
costs are related to numbers based on historical data;   for future work trends will
be used.

Book costs are similarly shown by relating average prices to average
acquisitions on the basis of past data and observed trends.

Overheads, which include all expediture not otherwise accounted for, will be
modelled for the ten-year period by data, but in future will have a model-
generated component, space,based on average acquisitions and average book size.


Potential Uses of Model

As a strategic planning tool at the highest levels of policy-making - the
Department of Education and Science - this model, when fully operational, would be
useful in :-

1) Assessing the effects of personnel and economic constraints.
2) Developing strategies for action, based on informed scenarios of the future -
   technological changes;   trends in demand on BLLD, regions, etc.;   transport
   of interloans;   centralized cataloguing and manpower requirements;
   photocopying restrictions.
3) Examining costs imposed on individual libraries by adhering to policies
   optimum for the system as a whole, to indicate likely sources of difficulty
   inherent in policy alteration.
4) Testing various optima derived by other researches for detailed aspects of
   the system - e.g. loan periods, journal collection size.
5) Management training - by allowing trainee librarians to test their decision -
   making skills while simulating the consequences.
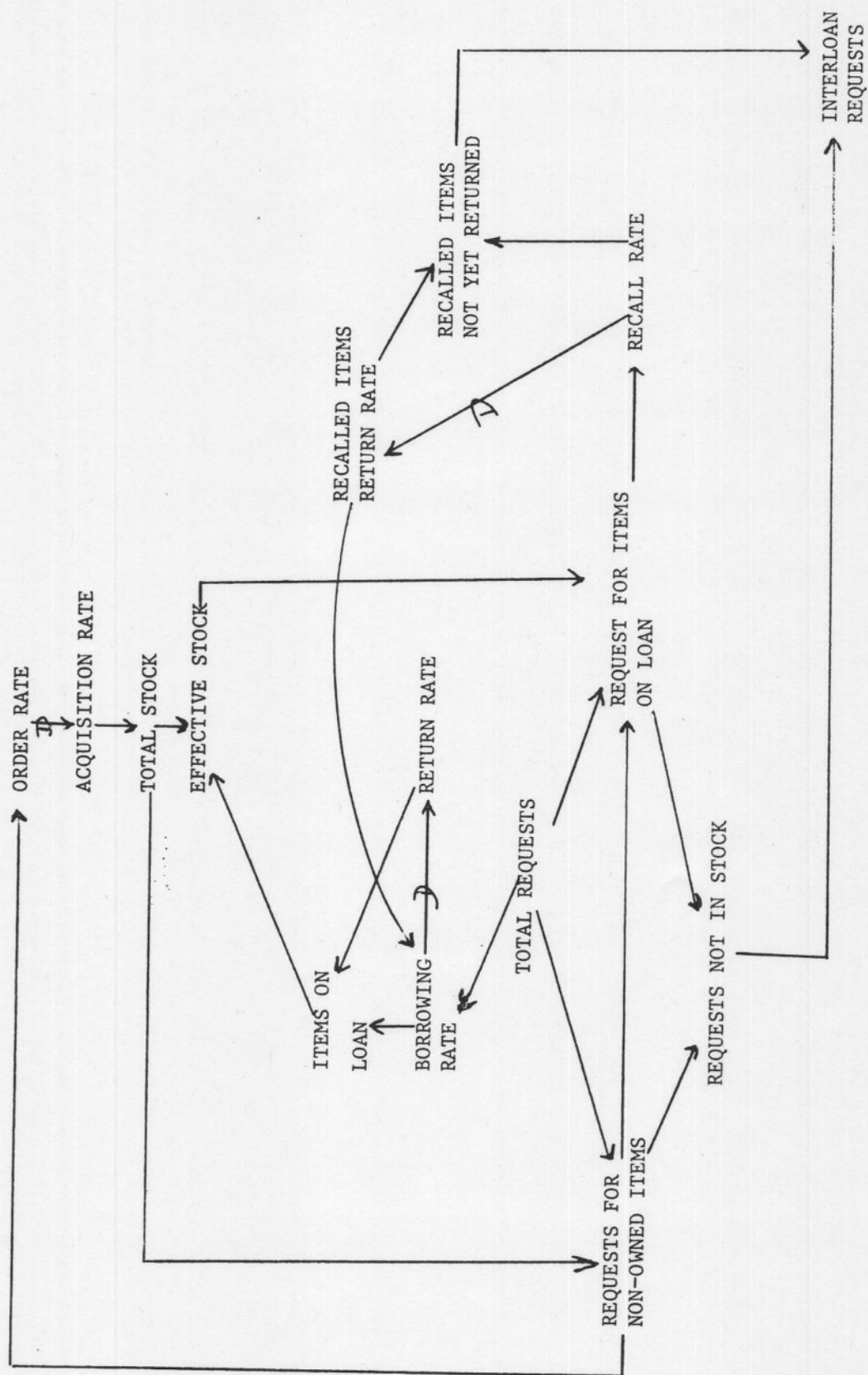
Simplified Influence Diagram of Single Interlending Unit
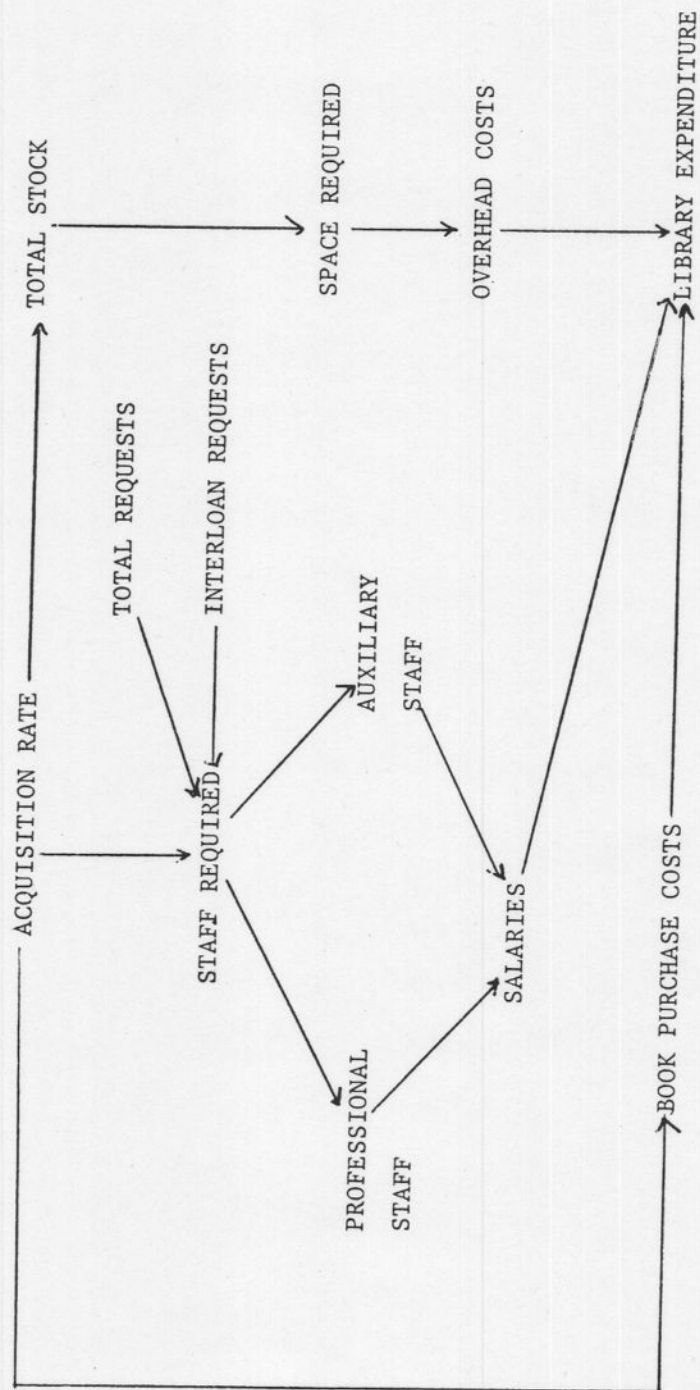
Simplified Influence Diagram of Economic Sector