DECISION MAKING IN LIBRARIES

by

PROF. HANS MICHAEL*

INTRODUCTION

Successful management and planning in libraries and information services needs even more emphasis on facts and figures as cuts bite. Intuition and experience are still worth their weight in gold, of course, but in addition to these, effective management needs analytical and proactive skills and attitudes. Such analysis and skills are based on the quantitative approach, on close attention to movements of cash in budgets, ratio between staff and users at service points and at stress foci, and the optimum movement and delivery of documents to the user communities.

As managers, much of our time is reactive, as we react to events which occur and make fire-fighting decisions in the attempt to put them right. The theory always tells us that managers should be proactive, looking and planning ahead, anticipating pressure points and policy threats, devising schemes that will, if based on proper theory and facts, provide the best service within feasible and cost-effective limits. Sometimes, such schemes are called strategic plans, particularly if we see them reaching far into the future. However, we do this, there is always a large component of risk and uncertainty, since we live and work in an unpredictable world.

CHOICE AND PROBABILITY

It would be facile to argue that this world is deterministic. This position could be reached in various ways, for instance, if we argued from a position of consummate pessimism that things always went wrong and would not stop changing ways for us. It could also be reached if we placed too doctrinaire an emphasis on the behaviour of data, suggesting that particular patterns and trends reproduced themselves in regular cycles, spiralling ever downwards and creating anarchy. Far more
plausible is the argument that suggests that the world which managers inhabit is probabilistic. So, from this assumption, we might argue that in decision making we are able to analyse several different options and extrapolate the consequences likely from each. To these options, we can attribute credible and manipulable probabilities, i.e. the probabilities which the options might demonstrate through occurring or not occurring.

Having said that, we should distinguish between views of it. Theoretical probability is what we find when we draw one card from a pack, while subjective probability depends on a degree of belief, as well as what might happen in a world of independent events (e.g. we believe that a particular party will win an election).

For the second to have any reliability, there to be a consensus, preferably of experts, as the Delphi and other forecasting techniques seek to demonstrate. Strictly, probability theory tells us that the probability with which an event occurs is (a) the number of equally likely favourable outcomes, divided by (b) the total number of equally likely possible outcomes (assuming we are looking for favourable outcomes). It invites us to consider the probability of events, the probability of their opposite (say, heads instead of tails when tossing coins), how we might calculate the probability of two of three things happening at the same time, and so on. An assumption is made that events happen (or are sampled) randomly, and that enough events happen for valid and reliable results to be used.

**DECISION TREES**

A useful way of representing both probability and sets of choices is through using tree diagrams. These are sequential charts that list the possible outcomes at each stage of an experiment, along with the probabilities. From these, we can see at a glance both the sequence of outcomes and their probabilities. From these have grown decision trees which many managers use for decision making and planning.

These are simply more elaborate tree diagrams, representing, graphically, the different paths traced by different options (say, if we do this or if we do not do it), and comparisons between each can be built into the tree so that differential probabilities can be seen quickly.

**EXPECTED MONETARY VALUE**

But we need to push this argument further, since other factors, like monetary value, are involved. Often managers draw on historical information (i.e. information derived from current and past actuality and proactive) for their decisions. What has happened in the past and what is gaining on at present are, after all, important and valid indicators for performance in the near and far future. It is one step more to attribute probabilities to the various settings within which decision making is likely to take place.

Libraries generally have time scales imposed on them, and these frequently change, often short notice. It is wise to consider contingencies like this when calculating and extrapolating with ostensibly reliably figures; after all, they merely reflect external circumstances, and have no directive effect on them, except that effect deriving from wise decision making and forward planning itself.

**THE VALUE OF INFORMATION**

Having said that, of course, we would need to define and differentiate the type and source of information more finely. An assumption here is made that, as many firms do, information has to be purchased outside. This is then collated with information already held in-house, which may be considerable. In libraries and information services, moreover, the real comparison to be made is the one between decisions that are made in the absence of reliable MIS and those that are made with the benefits of one. It may be that the examination of such a cost-benefit trade-off in a library, through the comparison between (hypothetical or actual) decisions made in various
states of information, would reveal important climates for decision making. In essence, the particular decision-making situation throws up its own methodology.

For instance, in such a situation, a manager can distinguish the several options, and can project intuitively ahead, so as to imagine how they might perform under different regimes. Such a manager will know, through experience and insight, which regime is most likely: it may be a scenario of retrenchment. Such regimes or scenarios can be represented in hard numerical terms, not just in the enumerative sense (line-item budgets, acquisition figure, issues, staff : stock expenditure ratios), but also in terms of probabilities. Having got to this point, managers may well be impelled to calculate the likelihoods of the particular options working and scenarios appearing, and then calculating what pay-offs will accrue from each. If manager wish to conceptualise the sets of decisions in terms of losses rather that pay-offs, this can be carried out although the workings are not given here). Last of all, managers want to know what will happen, given various states of knowledge or information; they assume that perfect knowledge is rare, but may well wish to determine how much it costs to enable information to flow into system, and then consider, in cost-benefit terms what charges will be induced on the decision making and its results.

In many ways, the concepts here are relevant to decision making in libraries and information service. The concept of the EMV, for instance, expected monetary value, is one which, if translated into the profitability or ability to avoid loss making of particular cost centres within the organization, has direct application. An advantage is that managers can devise different alternatives and work them out without inflicting damage on the on-going systems of the library. Only when the various options have been considered, with pay-offs and differential access to Information, does the actual process of change need to occur. In this sense, the application of decision matrix approaches, and the probability theory implicit in them, makes good sense for the proactive manager. It is, of course, possible to speculate about other applications to different search options undertaken by users of on-line systems, to cost-benefit/utility models of reference services and individual users using resources, although, in such areas, there are conceptual as well as managerial problems (e.g. in articulating notions of cost and benefit in situations often regarded impressionistically). Nevertheless, concepts like paying for information, cost recovery in document delivery systems, trade-offs between buy and borrow policies, and more prosaic but essential administrative services all lend themselves to this treatment.

The versatility and range of quantitative techniques in library and information management are reflected in bibliography and in current research in the field. At its simplest, the case rests on the proposition that there seems no good reason for good managers to ignore good things.