INFORMATION PROFESSIONAL AND THE NEW TECHNOLOGY

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ABSTRACT

High technology is forcing an unprecedented number of changes on libraries. In the background of the recent technological developments, highlights the impact of automation on staff and on the administration of library operations. Emphasizes that the library administrators and managers must develop mechanisms for dealing effectively with the changes caused by the introduction of new technology in a library. Discusses the guidelines recommended for introducing staff to the changes caused by the new technology. Concludes that any library set-up could benefit from implementing these guidelines.

INTRODUCTION

Technology is exerting an increasing influence over libraries. Recent advances in the use of computers and information technology have accentuated the importance of technologies to libraries. Since the 1960s, libraries have used technology in general, and computers in particular, to automate a wide range of administrative, technical and readers services. The success of any automation project depends on the manner in which the staff that will use the system will respond to its implementation. One study has estimated that over 85 per cent of all failures in systems implementation can be attributed to human problems, the most common among them being effect of the fear of change.

Change itself is often frightening. Three common factors can be visualized as the immediate result of the introduction of new information technology. First is the speed of the technology and the volume of its potential transactions; libraries are now expected to use various types of technology to provide information more quickly and in greater volume than before. Second, the technologies being introduced are mostly foreign, which is evident in both the physical appearance of these new tools and in the terminology, or jargon, used to explain them. Finally, the rate of change has been greatly accelerated with the proliferation of microcomputers and related technologies.

* The views expressed here are those of the author only and not necessarily of DESIDOC.

INFORMATION TECHNOLOGY : CHANGING SCENARIO

Information technology is a generic term used to denote all activities connected with computer-based processing, storage and transfer of information. It involves computers, electronic media, satellites, telecommunications and reprography.

Microprocessors

The advent of microprocessors has led to various trends in information processing : (i) added specialized functions to the general purpose computers; (ii) microcomputers, compatible with large systems in performance; (iii) distributed responsibilities and a network of data sharing arrangement in a single system; and (iv) personal computer phenomenon. These developments are of great importance to scientific and technical communication. In-house mini-computers are used for more sophisticated data and text-processing, database management, and production of a variety of publications.

Storage and Memory Technology

Besides the processing aspects of computer, there has been a considerable improvement in storage and memory technology. In addition to floppy disks and microfloppies, there is now videodisk which can store a large volume of information. CD-ROM has also vast storage capacity. An erasable optical disc named magneto-optic disc can store 6,000 Mbyte of data on a thin film of a magnetic material.

Communication Technology

The combination of computer and communication technologies has played an important role in facilitating information exchange. From switched network, the communication technology has moved on to packet switching, with a computer serving as a terminal and having access to any of the computers within the network. A computer network is indispensable for sharing enormous information through databases by a large number of users in diversified geographical locations. Advances in communication technology has resulted in convergence of service modes, permitting telecommunication to handle speech, data and visual information in a unified manner.

Reprographic and Micrographic Technologies

Reprographic and micrographic technologies, a means to provide access to document resources to users scattered in various locations, find application as a communication medium, computer output medium and storage medium. Computer microforms systems offer high online storage capacity.

Automation of Library Operations

Computer and communication technologies as also reprographic and micrographic technologies are growing at a fast rate, bringing in new innovations for the storage, retrieval and communication of information. The libraries, as organizations, have been much quicker to embrace automation. The major facets of library automation activity include the application of computers in six areas of library work : circulation control, descriptive cataloguing, catalogue maintenance, reference services, acquisitions, and serials control.

Though there is a little doubt that automation has produced a quantum leap in staff productivity in libraries, the automation has been implemented more for economic reason than for dealing with staff considerations that are the result of the changes.

IMPACT OF AUTOMATION ON STAFF & LIBRARY OPERATIONS

Library automation is not one-time event, but a continuing process; it is a never ending process of action and reaction within the library as an organizational unit. The major

components of this continuing cycle of library operations may be categorized as : operations and reporting; staffing; planning; and computing and human factors. The components do not constitute separate entities, on the other hand they tend to merge into one another. That is, the organizational functions of operations and reporting affect the staffing functions of the process; the staffing functions in turn affect the planning functions, and so on.

Operations and Reporting

One effect of automation on the operations and reporting structure of libraries is the blurring of traditional lines of responsibility and authority. In this regard, a large number of recommendations have appeared in the literature for using automation as a mechanism to decentralize large central libraries and for redefining the nature of organizational structure in libraries.

The reporting function of automated library systems is usually thought of in terms of operations management. Most automated systems in libraries generate a variety of statistical reports that can be used in planning library operations. Management information system (MIS) aims at putting resources, such as computers and staff together to achieve better productivity. The bright side of MIS is that it affords the opportunity to better utilize available resources in a rational way. The dark side is that it can allow managers to individually track the productivity of a given staff member.

Staffing

The second component in the automation cycle is the impact of computerization on the staff of the library. Staffing is the beginning and the end of all automation projects. The literature on the subject indicates that automation can be either a positive or negative force on employees, depending on how the automation activity is implemented.

The positive effects of automation on staff can be characterized as :

* Automation can be designed to reduce repetitive work like typing and retyping letters from scratch by using word processing.
* Automation can be used to upgrade the skills of the supervisory staff, who can utilize more time on decision- making, planning, and supervision of subordinate staff rather than doing routine jobs.
* Automation increases the chances of getting variety of outputs from single input and generate data whenever required. Thus there is flexibility in various tasks performed.

The negative effects of automation on staffing can be outlined as :

* The effect of automating library technical services may 'deskill' many technical services positions through the use of computers, e.g., the cataloguers now spend the majority of their time over screen modifications on the online cataloguing systems.
* Automation can eliminate jobs or force the complete retraining of personnel.
* Automation can reduce the level and the quality of interpersonal communication.

Planning

Whether automation will have a positive or negative impact on the staff is largely determined by how well the system is planned. However, much of the planning process in libraries has traditionally taken place at the middle manager level. Whereas there has been stronger consensus in the literature that upper-level administrators or the para-professional staff have a greater impact on the success of automation than middle level managers. The participation of former is important as they control project funding and support, whereas the para-professional staff does staff interaction with the system.

Computing and Human Factors

The term 'Ergonomics' describes the study of any aspect of human-machine interaction. The purpose of ergonomic research is to explore the effect of physiological factors on staff utilizing computerized systems. As library staff is increasingly exposed to automation, physiological considerations will have a direct effect on staff productivity. Generally, the emphasis is made on the purchase of machinery rather than adapting the machinery to fit the staff and the operational circumstances, that is, the machinery and furniture utilized by the staff should be adjustable to fit them. Some of the basic ergonomic considerations include :

* The chair should be adjustable in terms of height, back support, and arm-rests.
* Staff should be protected from recurring sources of loud noise associated with automation.
* The table supporting the microcomputer should be adjustable in terms of height and should be large enough to hold both computer and work material.
* Inexpensive glare screens are available for the video display terminal, which reduce the eye strain to a considerable extent.
* The VDT should be placed at a 90 degree angle to room windows to reduce glare.

The library managers should consider these points while planning for new workstations and they should be aware that ergonomically designed systems allow staff to be more productive. Experiments have demonstrated that ergonomic techniques have helped the staff work longer, faster and with fewer entry errors.

INTRODUCING LIBRARY STAFF TO NEW TECHNOLOGY

The technology is there, but without human support it cannot be utilized efficiently. While none of the individual changes caused by introducing a new technology are typically beyond the capabilities of a library staff, the enforced inter-relationships between new technologies can cause an impression of confusion. This can limit any positive outcome from the introduction of the new technology. Library administraters and managers must develop mechanisms for dealing effectively with the changes caused by the introduction of automation or technology projects within a library. A great deal of thought and concern has been expended on finding a practical approach for implementing change in any library situation, which becomes clear through any extensive review of the literature. Some of the steps recommended for introducing staff to the changes caused by the new technology are:

Proper Planning

High technology can be frightening without proper planning. Planning is the first and the essential step in any successful project. Although it may not be necessary to have a formal planning process, some type of organized plan must be developed. While there are many situations when outside consultancy may be appropriate, it is not always necessary to hire an outside consultant to manage the introduction of high-tech into the library. In most cases, an internally directed planning process may produce the best results. Regardless the time required to undertake the planning process, it is an essential element when introducing change into an organization.

Staff Participation

Planning guarantees participation and it is especially important when introducing high-tech products/methods that involve staff with the project. Involvement with the project can only be established by ensuring active participation by every concerned person. Many libraries pay a price for selecting an automated system without staff participation. While a unilateral decision by the management to go with a system without the participation of staff in the review process may expedite its installation, it may not necessarily have the support of the staff.

Preparing the Staff

This step includes behind-the-scenes activities to ensure proper planning and participation. It is essential that staff be adequately prepared in advance before the implementation of new technology. Several new technologies ranging from microform reader/printers to new CD-ROM workstations, have been implemented in libraries without proper training. It cannot be overemphasized that proper use of the new technologies in libraries and information services is only possible with skilled personnel. In most cases, however, skilled personnel do not exist and must be trained. Skilled personnel are able not only to derive appropriate and original solutions to difficult problems but also to train other specialists, thus producing a very valuable multiplier effect.

Providing Opportunities for Practice

One highly recommended suggestion is to have a 'preview' period for each new technology, as a way to lessen the pressure on the staff to perform expertly the first day a new product is available. The staff will not only welcome an opportunity to participate in the process, but they will also appreciate a demonstration that appropriate preparations have been made to ensure the successful use of the equipment.

Patience

Even with good planning, total staff participation, excellent preparation, and a scheduled preview period, the one unalterable law of high technology seems to be that nothing is ever accomplished on schedule. This leads to the most important recommendation : patience. One frequently overlooked solution is to simply and publicly change a previously announced date. Eventually, the system will become operational on schedule, since that will be the latest date one predicted. One solution recommended to such situations is to build 'holds' into any long-term schedule, i.e., the final part of the countdown doesn't begin until certain basic steps are accomplished.

Prudence

It is one thing to initiate a programme; it is something else to prudently ensure its future development and growth. This is especially true given the unknown nature of future technological developments and their costs. Therefore, it is prudent to consider not only initial costs, but also on-going expenses and possible changes in technology. In planning and preparing for new services, it is essential to avoid making commitments, either to staffing levels, certain models or brands, or specific technologies without looking closely at the long-term ramifications. This is especially true of decisions that commit future expenditure.

Before investing heavily in new technologies that will require sizeable annual and on-going costs, a library must consider the impact of these future expenses on the overall provision of library services.

CONCLUSION

Changes, often sudden and unanticipated, will continue to affect library staff. High technology, as currently exemplified by microprocessors and CD-ROMs, will continue to evolve many more such changes. Library staff will continue to alternatively embrace and resist these changes. In this changing scenario, it becomes important for the library managers to develop mechanisms for introducing these changes in the most positive manner possible. The guidelines discussed above are suggested as first step. Virtually, any library situation, from system-wide automation to staff reorganization in branch libraries, could benefit from applying these guidelines.

FURTHER READING

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"The true source of right is duty. If we all discharge our duties, rights will not be far to seek."

–Mahatma Gandhi

"He who is to be a good ruler must have first been ruled, as the saying is."

–Aristotle

"Necessity and opportunity may make a coward valiant."

–Thomas Fuller

"He seeks to produce not smoke from light, but light from smoke."

–Horace
