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Information Technology:
Choices And Implications

By

Gourang S Kundapur
INFORMATION TECHNOLOGY: CHOICES AND IMPLICATIONS

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Press Trust of India

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INFORMATION TECHNOLOGY : CHOICES AND IMPLICATIONS

Information technology is no more a luxury; it is a necessity. And now it is an affordable necessity for the Press. It brings advantages in quality, speed, control and flexibility while being at the same time cost-effective.

The advent of the microprocessor chip has made this possible. With every passing year, it has become more powerful, more versatile and cheaper. Increasingly, this has meant that the "appropriate technology" for us in the developing countries is the latest technology adapted appropriately to meet our requirements. No more do we have to adopt technology that is being phased out by the more advanced countries. Nor do we have to go in for prohibitively costly machinery.

The trend today the world over is towards distributed handling with the help of microprocessor-based systems. In many countries, including India, scientists are working on the design of powerful computers by combining together several microprocessor-based systems. And adopting the same philosophy in our newsrooms, all that we need for the variety of tasks is a series of specially adapted personal computers or other microprocessor-based systems.

The communication, editing and typesetting of news is progressively being handled on video display terminals and personal computers in newspaper establishments on our subcontinent and in other developing countries. And now even our complicated scripts are being committed to computers, overcoming one of the major hurdles in the path of our
modernisation.

Development of Technologies

I have watched with fascination the development of newsroom technologies and their introduction in the Press in the advanced countries and more recently in the developing countries. The changes I have seen in the last 17 years in the computer and communications systems in Reuters, AP, UPI, AFP, DPA and Kyodo news agencies and in the New York Times, Los Angeles Times and in other American and European newspapers as well as in the Hindu, the Indian Express and now even small newspapers on our own subcontinent have been nothing short of dramatic. Today's computer systems are smaller, more versatile and perform more newsroom tasks more efficiently, speedily and cheaply than those of even five years ago. And our own scientists are now designing most of these innovative systems.

Indigenous Systems

Let me give you a couple of examples. In the next few weeks we plan to introduce a PC-based Devanagari system in New Delhi which will enable us to prepare and edit news reports in Hindi on video display terminals and transmit the items to our newspaper and other subscribers. The system, using technology developed at the Indian Institute of Technology in Kanpur, is being adapted for our news service by National Information Technologies Ltd. (NITEL), a Bhopal-based company set up jointly by PTI and Madhya Pradesh State Electronics Development Corporation. PTI's Research and Development Department is designing the communication part of the system.

Last week we saw the demonstration of a simple bilingual desk-top publishing (DTP) system developed by Network, based on their electronic typewriter. Essentially it offers facilities for typesetting up to eight columns of news or other matter in English and Hindi or Marathi extending to the width of a broadsheet newspaper. The system is being offered for about Rupees 49,000 (about US Dollars 3,500), approximately...
a tenth of the price of the imported Apple Macintosh-based DTP system which is also now available in India. This latter system is of course much bigger and more sophisticated and allows the user to prepare and combine text and graphics in a page layout on a video screen and produce camera-ready copy for photo-offset reproduction. Photographs can also be fed in from a scanning device. The system, however, has limitations on the size of copy. Abacus, Hindustan Computers, Hinditron and other Indian companies are now offering DTP systems of various degrees of sophistication ranging between the two I have mentioned, providing a wide variety of options.

Similarly, Indian companies are now offering specialised systems for the communication and editing of news both in English and Indian languages, in competition with systems available from Atex, Linotype and other foreign companies. The difference is that the Indian systems, particularly the software, have been specially developed for Indian news establishments, while the foreign systems have been adapted for this purpose.

Selection Criteria

We have been using information technology long enough in the Press in developing countries to spell out the criteria we should apply for selection of the right configuration of systems in our newspapers and news agencies. These criteria would naturally be different from those applied in the advanced countries. One of the major differences would be on the issue of staff. When industrial organisations in the developed countries went in for new technology, one of the main considerations was to reduce labour costs and labour problems. Newspapers were no exception, although it was not so easy to retrench labour.

I would suggest that in our case it would be worthwhile not to consider retrenchment, but instead to treat the staff as assets because of their knowledge of the organisation and commitment to it, and because of their experience of working under pressure. I feel also that in the introduction of technology, the staff in news organisations in
developing countries would in general be more willing and adaptable than their counterparts in developed countries once they are helped in getting over their fears of the changeover to entirely new systems.

PTI's Experience

When we drew up our modernisation programme in PTI, the first thing we decided was that there would be no retrenchment. We designed the software for the computerisation of our news operations so that there would be minimum changes in these operations and only minimal training would be necessary for the journalists and other staff. The software was designed on our premises by CMC Ltd with the help of the National Centre for Software Technology. Our journalists and other staff involved with the news operations were continuously associated with this.

The IDEAS (Information Dissemination, Editing and Switching) software system has several customised features such as a special editing module, automatic assignment of incoming news stories to various editorial workstations, and automatic transmission and retransmission of news stories, which have made news operations in PTI's four major news centres of New Delhi, Bombay, Calcutta and Madras very much easier for the staff to handle than in the old manual system.

We did not start full on-line computer operations immediately, allowing plenty of time for the staff to become accustomed to working on video display terminals and to get over their fears of change. They had to learn that computerised operations mean more uniformity and efficiency in working, more discipline and coordination. But they also found that the computers are designed to take over tedious, repetitive tasks and that working conditions improve dramatically. They have also realised that there are more chances to improve skills and more job opportunities.

Of course, we had more 'bugs' and breakdowns than if we had gone in for readymade software, but we learnt to cope with them and became more self-confident and self-reliant in the process. In fact, our
R & D Department grew out of these efforts, and it has now not only taken over maintenance of the IDEAS software system, but has refined and expanded this software. In addition, it has developed several interfaces necessary for the computerisation programme and designed a series of electronic units and systems which have spurred the expansion and diversification that inevitably follows modernisation.

Ways To Absorb Staff

With proper planning, it has been possible to absorb the staff rendered surplus by the modernisation of the normal operations in the expansion and diversification programme. In fact, we have run short of experienced journalists and other staff to handle our new services as we have expanded phenomenally in the eight years since we embarked on our modernisation programme, quadrupling our turnover during the period. But we have undertaken recruitment only to fill jobs that existing staff could not tackle. And the policy has paid rich dividends. One of the features of modernisation is the rapid turnover of new, highly qualified staff. Electronic engineers in particular are difficult to keep. A few electronic engineers have left us to go abroad for higher studies; some others have left for better jobs. In this context, the additional efforts we have made in training our existing staff have seemed doubly worthwhile. Our engineers and technicians in particular have responded heart-warmingly to the training, switching over from maintaining electro-mechanical teleprinters and allied equipment to taking care of our computer systems and the variety of electronic equipment we have inducted for our new services.

Besides staff, one of the major differences between developed and developing countries in the introduction of new technology is the cost factor. The investment on equipment normally constitutes a higher proportion of the cost in our countries than in the advanced world because of the high costs of imports and of foreign exchange.

Phased Introduction of Technology

It is possible and advisable to introduce new technology in phases, expanding modularly at your own pace to suit your requirements and
your budget. It would be worthwhile to ensure that the systems you choose for communication, for preparation and editing of news copy, for typesetting and for printing are compatible with each other and that they are upgradable and expandable. There is enough expertise now available in developing countries to provide for customisation to adapt the systems to meet your requirements, with all the features you consider essential immediately and for your phased expansion.

The importance of associating senior members of the staff from the editorial, communications, typesetting and press departments in the planning and implementation of any programme of modernisation in a newspaper cannot be overstated. They can help you in drawing up the specifications of the systems you require. The systems should enable you to produce a better newspaper, with more efficiency and speed and in a more cost-effective manner.

It is best to start by examining the features and facilities provided by various available systems and to discuss these in detail not only with the vendors but also with different users. You can then decide on the features and facilities you would require and choose the system or systems on this basis.

Other Criteria

In choosing the systems, particularly in case you go in for imported units, it would be worthwhile to remember three points. First, heat, humidity and dust are normally part of the environment in developing countries, but these are enemies of computer systems. Air-conditioning will, therefore, be necessary when you bring in computer systems and will add to your costs. Of course, your staff will welcome the improved working conditions. In the last few years, some computer manufacturers have made attempts to ruggedise units and systems to meet the harsher environmental conditions in developing countries. It would be advisable to acquire such equipment.

Secondly, the difficulty in getting clean and steady power supply is
another common problem in our countries. Power cuts have become common in India following the extensive drought conditions over the last year. To add to our woes, we have had some instances recently of heavy fluctuations and even surges in voltage in places like New Delhi and Ahmedabad, which have caused damage to equipment and have resulted in major interruptions in services to subscribers. In these circumstances, standby generators with uninterruptible power supply systems, voltage stabilisers and surge suppressors have to be provided for, adding further to the costs.

Thirdly, the complexity of our scripts have been a major contributory factor in the delay in introduction of modern technology in our countries. Only recently have cost-effective computer systems been developed to handle word-processing and typesetting in our languages. Obviously, refinements and new features will follow. Meanwhile, standards will be few and it is, therefore, necessary to be extra careful in choosing the systems to handle Indian and other languages with complex scripts. There is still a wide variance in keyboards. The keyboards on typewriters, teleprinters, typesetters and computer terminals are different. I met one typesetting operator in Devanagari (the script for Hindi and Marathi) who had been through the trauma of training on three totally different keyboards as his organisation went through different phases of technological development. And I would not be surprised if he has to go through one more round of training because the keyboard he was working on will definitely undergo change.

Communication

In PTI, we are now tackling another problem -- communication of the script. PTI Bhasha, our Hindi news service which we introduced in April 1986, is now being provided on Devanagari electro-mechanical teleprinters. These teleprinters use the highly limiting 5-bit Baudot code. The new Devanagari computer system we plan to introduce shortly will produce the script in 8-bit code called Indian Script Standard Code for Information Interchange (ISSCII), which is an expanded version of the universally used ASCII 8-bit computer code. Our R & D Department is now working on transmission of the Bhasha service in ISSCII code.
on teleprinter channels to our newspaper and other subscribers across the country.

PTI, as the major source of news and information in the country, has continuously attempted to pass on the benefits of the induction of information technology to print and electronic media and other subscribers. This includes the transmission of its news services at high speed onto electronic teleprinters in newspaper premises and directly into newspaper computers with index information allowing for automatic sorting of the news copy. Later this month we plan to begin the broadcast dissemination of our various news services as well as our recently introduced newsphoto service directly via the INSAT-IB domestic satellite to newspapers and other users in the country in a one-year project which we believe will provide a quantum jump in news agency services. One common aim in the various projects of our modernisation and diversification programme is to improve and expand our news services to newspapers and other users, and thus, if possible, to act as a catalyst in their own modernisation. PTI's R & D Department, in association with NITEL, is also helping newspapers to induct high speed communication channels and new information technology systems.

Self-Reliance

I would like to mention one other point. The concept of providing reliable, round-the-clock after-sales service for computer and communication systems is yet to be fully accepted in our countries. Quite often newly developed systems develop 'bugs' at unexpected hours. Again and again we have found that supplier companies are unable to offer prompt service. On more than one occasion we have had a breakdown on a Friday afternoon only to find that the supplier company enjoys a five-day week and the system can be restored only on Monday. Only a few companies such as the public sector CMC Ltd offer round-the-clock services, but the charges are obviously quite high. Even in their case, we have found that essential spares have not been available on a couple of occasions. I believe that a similar situation exists in other parts of the subcontinent and in other developing countries. The best solution to this problem is to train our own engineers and technicians to tackle...
at least routine problems and to maintain our own inventory of essential spares. I believe that minimising one's dependance on the companies which have supplied one's computer systems is an essential component of maintaining the Freedom of the Press.

Guidelines

I suggest it would be a good idea if this seminar were to evolve a set of guidelines for newspaper establishments intending to induct information technology to produce a better newspaper faster and more efficiently, with less effort and at less cost. Perhaps some machinery could be evolved to provide consultancy services in this area to small newspapers in developing countries.