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Role of Information in LIS

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Abstract

Information is regarded as vital for all industries ranging from rural handicrafts to large-scale heavy manufacturing. Medium and large-scale industries can afford to have their own information units. Even then, they have to depend extensively on sectoral, national and international documentation/information centres for meeting their information needs. Of late, many industrial associations have started establishing research and information units on cooperative basis.

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RESEARCH AND DEVELOPMENT

Impact of Information Explosion

Mr. Weinberg in his report to White House submitted in 1963 stated that:

"We shall cope with the information explosion in the long run only if some scientists and engineers are prepared to commit themselves deeply to the job of shifting, reviewing and synthesizing information, i.e., handling information with sophistication and meaning not merely mechanically [1]. Such scientists must create new science not just shuffle documents: their activities of reviewing, writing books, criticizing and synthesizing are as much a part of science as is traditional research."

As Lib carried out a survey on the impact of information on research and development in 1960s. The response from 245 research and development personnel was analysed as follows:

Finding Number of Responses

(a) Information made available indicated duplication of the work of others 43
(b) Information, had it been known earlier would have led to:
(i) Planning the research differently 36
(ii) Alter the plan research in progress 60
(iii) Saving of time, money and research potential 106

Wastage of Resources for Want to Timely Information

United Kingdom

The estimated cost of unintended duplication in scientific research in UK due to delay in the supply of information in the 1960s was Rs. 21.6 million.

United States of America

The essential annual cost by way of unintended duplication of governmental research in the field of electronics in the sixties was Rs. 15 million [2]. The estimated cost of 5 years of research on electronic translation equipment in USA proved to be duplicating the work already done and published in Russia was Rs. 18.7 million.

According to a report of the Controller General of US, the US Air force and NASA spent a whole year inadvertently developing similar space vehicles—Atlas Agena B and Atlas Vega. This costed a wastage of Rs. 135 million [3].

INFORMATION POLLUTION

With the increase in the volume of information, it is becoming difficult to locate and pull out specific information. Special Assistant to the President of USA stated in 1965 that:

"Chaos, duplication and waste are the words used more and more frequently by responsible members of our nation's scientific community to describe the problem they face in being unable to refer effectively to the records of the previous accomplishment."

J.D. Bernal long back stated that It may be easier to find out a fact by experiment or to build-up a theory than to ascertain from the published documents whether these have been discovered or deduced before."

The explosion of literature does not really indicate the growth of new ideas. According to Bourgeois, Former Director, National Library (Switzerland) "out of 100 technical articles only 8 furnished a really original contribution to learning and research."

CHARACTERISTICS OF SCIENTIFIC AND TECHNOLOGICAL INFORMATION

Scientific and technological information made the greatest impact in the post-industrial society and contributed a great deal for research and development. Much of the scientific information is open and is freely exchanged. There are a number of bibliographical tools, which monitor and control the scientific and technological information. Much of the research is government funded (especially in developing countries).

However, exchange of information is selective and limited to personal association [4]. Inter-institutional agreements and inter-governmental agreements: joint research projects; support from international organizations play an important part in the dissemination of information. Nevertheless, many encounter problems in obtaining information, owing to limitation of funds; lack of national information policies and plans; funds for translation and reproduction of materials; restrictions on currency exchange in some countries, etc. Under these circumstances, these centre's, should try to procure secondary sources of information like indexes, abstracting, journals, annual reviews, handbooks, etc. They should depend on national and/or international document supply centres. It is needless to say that they should however have a set of core journals in their subscription list [5].

BUSINESS AND INDUSTRY

Information Economy

William G. McGowan, Chairman of the Board, MCI Communications Corporation stated that "I see information contributing even more to industry than the machines and chemicals of industry contributed to our great national success in agriculture. The combination of data processing and telecommunications will increase productivity both on the plant floor and in the office" [6].

Business

The Ten ways to Get Ahead with information Technology

(i) *Telemarketing*: Using computer runs to research out best products, helps slash sales-force expenses and boost productivity.
(ii) *Customer Service*: By letting customer tap into your database to track their orders and shipments, you build loyalty and smooth relations.
(iii) *Training*: Training or retraining workers using video disks lets them learn at smooth relations.
(iv) *Sales*: Giving sales people portable computers, so that they can get messages faster and enter orders directly adds up to quicker deliveries, better cash flow and less paper work.
(v) *Better Financial Management*: By setting up computer links between the treasurer's office and your banks, you can obtain financial information faster and that means better cash management.
(vi) *Product Development*: By providing a toll-free number for customer questions and complaints, you get ideas for product improvements and new products. In house electronic publishing can help turn out products renewals faster for speedy introduction.

(vii) *Market Intelligence*: By assembling and manipulating data on demographics and competitors, one can spot untapped niches, develop new products and avoid inventory crunches.
(viii) *New business*: Information technologies make whole new operations possible.
(ix) *Locking-in Customers*: By creating exclusive computer communications with customers with customers for order entry and exchange of product and service data, one can help thwart competitors.
(x) Selling Extra-processing power to develop completely new services for outsiders. That way one can transfer some of the high costs of building one's information network.

Industry

Some of these are proved to be very much beneficial to the industrial units. (e.g. ATIRA, Ahmedabad). Governments have started coming forward to establish national information centre's for large, medium (e.g. NICLAI, Madras; FOSTIS, Mysore; NICDAP, Lucknow, etc.), and small-scale industries, e.g. SENDOC, Hyderabad). The types of information needed are not limited to production, but cover all aspects of industrial activity. The major types are:

(a) Identification of product, determination of technical and economic feasibility, including potential for use of indigenous resources, outlets, outlets for disposal of waste either as saleable by products for further processing, adaptability of technology to local labour, material and financial input, environmental hazards, costs of all inputs.
(b) Markets and marketing, home and overseas: data on the present, projections; structure of the market-competitive products and producers, customers, distributors; pricing structures, including competitors' cost and productivity; packaging and labeling for export markets: shipping-customs, legislative requirements.
(c) Manufacturing technology, possibility of purchasing know-how including through purchase of equipment, scale of plant, numbers and types of equipment total energy and water requirements, raw materials specification, products specification, process, variables, quality and other control procedures, labour skill requirements [7].
(d) *Equipment and materials*: suppliers, types and range of equipment or materials available, conditions for purchase, delivery procedures and schedules, costs, facility for training in use, problems of local conditions-provision of spare parts, maintenance, climatic effects.
(e) Standardization and standards, including standardization systems, standards adopted by industrialized nations and less developed ones, performance, health and safety standards, industrial regulations, testing facilities and certification services, specific product and materials specifications.
(f) Administration and management, including methods of organizing industrial enterprises, enterprise planning and management and management information systems [8].
(g) Planning of information at the governmental level, including the processes of industrialization, components needed (economic, technical and manpower) industrial planning methodologies and governmental policy.

PLANNING AND POLICY MAKING

Economic and Social Planning

Planning ministries, for that matter, all ministries of a government need up-to-date and timely information on the overall management of country's resources and general administration.

In India, the government had planned the following four computerized information systems initially:

(1) Agricultural and environment information system;
(2) Industry and technology information system;
(3) Manpower and social sciences information system; and
(4) Finance information system.

(a) Agriculture and Environment Information System aimed at building up data relating to:
i Hydrological resources; and
ii Condition in drought-prone districts.

(b) Industry and Technology Information System has many sub-area databases in operation. These are:
i Electronics Information and Data System;
ii Energy Information System;
iii Small-Scale industries information System;
iv Indian Standards Information System;
v Patent Information System; and
vi Library Information System.

(c) Manpower and Social Science Information System has the following sub-systems:
i Scientific and technical manpower information System;
ii Educational Information System; and
iii Compilation of Socioeconomic Indicators.

(d) Finance Information System has the following information sectors:
i Customs information System;
ii Central Excise Information System:
iii Departmentalised Accounting System; and
iv National budget processing System.

The above enumeration gives a fair idea of the type of information systems needed for governmental planning and administration. From this, we can also deduce that, governmental information needs fall in the following major areas:
(1) Information on natural resources;
(2) Exploitation of the resources;
(3) Human resource and development;
(4) Information system and management;
(5) Finance and budgeting; and
(6) Planning and forecasting.

The output of a DBMS may consist of individual records, portions of records, tables or other arrangements of the data from the database.

Management Information Systems (MIS): A 'MIS' is a 'DBMS' tailored to the needs of managers. A manager may be more interested in information leading to the choice of possible alternatives presented in terms of ranges of values of particular attributes. A MIS therefore, fits into the general DBMS framework. However, the information may be subjected to special processing not normally available in DBMS. Thus, special purpose systems useful for management are known as 'Management Information Systems' [9].

Decision Support Systems (DSS): The Information Retrieval (IR) Systems, DBMS, MIS perform specific operations on homogenous classes of information items. However, in principal, it is possible to conceive of information systems in which a variety of different components are assembled into a single cooperative structure that includes IR Systems, DBMS, Computer graphics systems, and other technical capabilities which collectively provide powerful tools in support of the decision making process. Decision Support Systems exist on a limited basis for narrow ranges of users employing databases in restricted subject areas [10].

MANAGEMENT AND DECISION MAKING

Information provides a means of improving the management of enterprises and services of all kinds. It has become a vital component in the dynamics of social evolution. As knowledge advances and its applications become more diverse and call for further research, precise information concerning the state of problem is necessary before action can be taken. Importance of decisive information occurs at all levels of management. There are specific information systems, which help the managers.

Important among them are:
Database Management System (DBMS): In this, the information is available in the form of special data elements stored in tables. The processes of concern in a DBMS are:
(a) Storage and retrieval of data;
(b) Updating and deletion of data;
(c) Protection of data from unintentional or deliberate damage or misuse or transfer, etc.

SOCIOECONOMIC DEVELOPMENT

There is still no easy answer to the question of whether information and communication technologies will fit into existing social patterns or whether social behaviour will be modified to fit the technology. Allowing for

differences between and within countries, it is forecast that the overall effect of this revolutionary technology will be to send a great wave of innovation flowing through modern societies during the early part of the 21st century. This is only a forecast, but if it is valid, then the eventual outcome should be not only a dramatic shift in the technological base of modern societies, but a dramatic social revolution as well.

At the leading edge of technology are a number of biometric security techniques, practical only for use in high security and defence organizations. Designed to measure those physical traits, which make each person unique, these systems currently include:

- *Electronic fingerprinting*: where scanners read the fingerprints of users every time they press a button with their thumb, and the results are then compared against digital files of an authorized user fingerprints records.
- *Retina scanning*: where a scanner reads the pattern of blood vessels contained on the back of the human eyeball.
- *Signature dynamics*: which focus not on the appearance of handwriting, which can be forged, but instead on subtle changes in motion and pressure, which cannot? Once again, the results are compared with records of the authorized signature.
- *Keystroke dynamics*: which applies the same technique as used in signature dynamics to use of the keyboard.
- *Hand geometry*: where the length of the fingers, the thickness of the palm and the shape of the hand are all measured and the results stored digitally for later comparison.
- *Voice recognition*: where the technology has developed to the point where it measures not merely the sound of human voices, but which tracks the actual physiology that produces speech.
- *Neutral network identification*: where very advanced records are compiled, based on patterns of nerves in the human face.
- *DNA fingerprinting*: where the genetic portrait of the DNA fingerprint is stored and compared with those of people seeking to access the facility.

Quite apart from the cost and benefit dimension to such attempt at improvement in computer security, in the final analysis this has to be a management rather than a technical problem. People are the source of the problem of computer crime and their management and control lies the best chance of tackling the problem. The range of services available to domestic users will include:

- *Entertainment* with viewer control over programmes for 24 hours a day.
- *Healthcare* with information sharing and even diagnosis and treatment by means of interactive video link-up.
- *News* with consumers able to point and click to select information for personally tailored new items.
- *Retail sales* with 24 hours a day, virtual global mall accessed by two-way video and digitized sales people.

INFORMATION HIGHWAY: THE HOME FRONT

Interactive Television

The communication and entertainment industries hope to use new technologies to make TV as interactive as the computer and as friendly as the telephone. Soon it will become possible to watch a missed TV show later in the week, even if you forget, or were unable to programme your VCR to record it. You will be able to view any of thousands of movies at any time of the day without having to wander out to the local video rental store. You will be able to shop for groceries, inspect real estate, and play video games with people from all over town-all without exercising more than your remote-control finger. In fact, the TV set is going to become a window into a vast array of interactive services made possible by the extension of technologies that enable the transmission of huge volumes of data needed to represent moving pictures.

WIDER CHOICE

The combination of high capacity transmission lines and compresses signals should multiply manifold the amount of information that can be piped into the home. Cable operators will be able to offer hundreds of channels and phone companies will be able to send TV images through ordinary phone lines. A tidal

wave of pictures and sound is about to crash into our living rooms.

Recently high-definition TV (HDTV) excited technologists and politicians who can produce bigger and sharper picture on the TV. The movement toward interactive services provides evidence that the new powers of digital communication will serve not merely to polish an ancient artifact but to create a new medium.

HOW INFORMATION SERVICES

Several industries are competing and something flowing together to create the new wave of home information services. Telephone networks are in a position to interconnect any two points on earth in milliseconds. Bell Atlantic (USA) is pushing for providing its customers with programming over a new interactive video service. Time Warner Cable (USA) is planning to set-up similar "full-service video networks" for its subscribers.

The company also talks about "distance learning". Students throughout a city, for example, might be able to turn into a physics lesson say, from the region's most talented teacher. Kids can call for homework help from their teachers or from fellow students. This ability to take classes from home could be Godsend to adults attempting to further their education.

ADSL

Asymmetrical Digital Subscriber Line (ADSL) allows an ordinary copper telephone line to carry a high-speed digital signal while simultaneously transmitting a voice conversation. ADSL permits transmission at 1.5 megabits per second through up to 18,000 feet of standard copper telephone wire.

CHANNEL SURFING

"channel Surfing" that works with today's systems of a few dozen offerings will be inadequate for browsing among the multitude of options that digital compression and fibre optics will make available. Even assuming hyper-grazing at two seconds per channel, it would take about 15 minutes to cycle through 500 channels. The more numerous the offerings, the more sophisticated the interface will have to be.

HOME SHOPPING

"Shopping without dropping" as it has been dubbed by technology analyst Paul Safflo, seems likely to become one of the first services to emerge from the void of a large information pipe into the home. Home-shopping channels already on cable TV in USA put out a steady stream of product commercial inviting viewers to place orders through on 800 numbers. Picture the way it could be. Hit a button on your remote control and the TV screen fills with a list of stores and catalogue merchandisers.

Other Services

Why stop at hard goods? The ability to pump high-speed streams of digital information into homes could change the way. The computer software is sold as well. The high-speed communication lines feeding into the home will also be able to transmit compact-disc-quality digital audio. Video can also create enhanced yellow pages. For example, bell Atlantic is demonstrating a video directory of doctors.

With a new device developed by 'TV Answer' will transmit user's responses by radio waves to local switching centre and relay it by means of satellite to the company's office. TV Answer can collect user's ratings, conduct opinion polls, help viewer to seek more information on a product, etc.

REFERENCES

1. Appukuttan, N. National Information System in Science and Technology: A status report (in planning of National Information Network: Papers presented at the 11th IASLIC conference (Dharwad) (1977), Ed by S. K. Kapoor and others, Calcutta: IASLIC, 1977).
2. Atherton, Pauline A. Handbook for information systems and services, Paris: UNESCO, 1977.
3. Halal, William, E. the information technology revolution: Computer hardware, Software and services in the

21st century. Technological forecasting and social change, v. 44; 1993, p. 69-86.
4. Information Power: How companies are using new technologies to gain a competitive edge. Business Week Oct, 1985.
5. Lincon, Adam. Dawn of a new information age. Managing information system, v.3; 1994. P. 70-73.
6. Martin, William, J. The global information society. London: Aslib, 1995.
7. Neelameghan, A. Technology transfer. Lib Sc v.20. N1-4; Mar-Dec. 1973.
8. Raman, M.R and Harilal. Approach to scientific and technical planning need for national information grid system. Annals of lib Sc v. 22, N4; Dec. 1975, p. 163.
9. Geninchat, C. and Menou, Michel. General introduction to the techniques of information and documentation work. Paris: UNESCO, 1983.
10. Mc. Gowan. William G. the Flowering of the information economy. Vital Speeches of the Day, July, 1983.

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