Potentialities of Networking –Scope and Opportunities in Kerala's Business Environment - UGC Sponsored Seminar. Department of Economics, Government Brennen College, Tellycherry, 7-8, July, 2005

Information and Communication Technology: As industry and as constituent in other spheres of development in Kerala.

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Networked Society

This paper deals an aspect which is not strictly coming under library and information science but will bring in aspects that enable harnessing the potentialities of Information and Communication Technology (ICT) in libraries as well as business possibilities that are open to those who have acquired ICT expertise from information service scenario.

Like Agricultural Society, Industrial Society, and the like what we are going to have in the immediate future is to be called a networked society which will be dependent on information knowledge embedded.

Fast developments in ICT are changing the basic structure of the present society. New methods of organizing work, production and trade, management and creation of wealth have placed knowledge, information and connectivity at the center-stage of every activity. Life is going to be different in the networked society that is taking shape. New occupations will come into dominance. There will be no need for you to go to the office physically to do the work. Schools will reach the children. Libraries are already accessible at the study desk at home or office. Some of the problems of environment such as pollution that threaten the very existence of humanity at the present will get solved. But new threats more serious may come into existence. Methods of communication will see revolutionary changes. Global, National and Regional Information Infrastructures will come into existence. Networks will connect any location in the world. Concept of borderless nations or the Global village may become a reality.

Office-Centered to Home-Centered

In the networked society, the homes rather than the offices will become the activity centers. Going by the predictions that 50% of the corporate workers will become telecommuters in India in the next five years, there is every chance that the networked society will surely result in less-travel society.

Physical location may become irrelevant for being able to receive or deliver services. This would bring about sweeping changes in work culture. Flexi hours of working coupled with innovative management of resources and manpower will result in enhanced productivity. It is estimated that on an average, the working persons in the world spend over 20% of the active time in a day on travel. In home-centered activities which saves travel time and stress better creativity, innovation and productivity will surely be achieved. Network culture with home-centered activities will ultimately lead to a home-centered economy.

Changes in Community Formation

One characteristic of present society is community formation based on work centers. Persons who work in the same organization form a bond through association, union or club. Social activities are usually centered on such formations. In a home-centered economy, the communities will comprise of groups from among people pursuing different jobs and professions in life but living in a specific area.

Mass Production to Production by Masses

Mass production by large industrial houses is the characteristic of last few centuries. Conflicts workers and the management characterized by strikes, lock outs etc formed part of this environment. In a networked society, small community dwellings, which are self-contained, would emerge. The community needs will be met locally from products available in its natural surroundings. The concept of trade unions may vanish. This would also imply that production would take place locally with a large number of persons engaged in producing goods that are required. This may to some extent help to overcome present problems of unemployment.

There are also a variety other shifts that my occur and some of them are

-Centralized to Distributed
-Group Education to Personalized Education
-Competition to Cooperation
-World as a Corporate
-Libraries to Electronic Knowledge Houses
-Broadcast to Interactive

Characteristics of Networked Information Society

-Anyone
-Anytime
-Anywhere
-Any information
-Any format

Any one: A full-fledged networked society implies that every human being on the planet has an access to the network. Network connectivity to home would become an essential infrastructure facility much as electricity or water supply connection. When the networked information society is fully

developed, it should be possible for a person from the poorest of the villages in the world to access information resources in the richest of the cities in the world.

Anytime: Network infrastructures which are expected to operate 24 hours a day and 365 days a year would make time zones and holiday patterns irrelevant in the life style of people. Cost of accessing resources across the nations may become independent of time of access or day of the week.

Anywhere has implication for persons who are accessing information as well as for the information resources being accessed. It should be possible for a person from anywhere in the world to access an information resource located anywhere else in the world.

Any information: With more and more emphasis towards right to access information, any information should become available to any individual. Some information may be priced whereas some others may be free but access to any information should be a reality. A shift to this scenario is already visible in the information policies of our country also.

Any format: A networked society should pose no trans border barriers and be able to communicate information in any format that is assimilable by the recipient.

The present day communication environment is predominantly broadcast in nature: newspapers, magazines, journals, television, radio etc. In the networked society, the environment will be predominantly interactive.

ICT Enabled Services

With these comments on the coming networked society let us have a birds' eye view of the industrial / business opportunities the changing environment is offering us.

White Collar work – both traditional and modern has gone digital. Mouse or keyboard has replaced the pen. The monitor and the memory have replaced paper. But this change in itself is not something revolutionary. What made the big difference was the arrival of communication satellites and submarine fiber optic cables. Digital white-collar work could now be sent to where the worker is. The worker can sit here and work there. Thus was born telework or Teleservices.

ICT now enables corporations in manpower-starved countries to outsource their peripheral services to companies in manpower rich countries. This leads to win win situations for both parties. While the first party can get their work done at lower cost the second party can solve their unemployment problem at least partially and also generate wealth.

What is ICTES?

Any activity carried out based on the application of ICT could be termed as ICT Enabled Service (ICTES). In other words ICTES cover the entire range of

services which exploit ICT for empowering an organization with improved efficiency or a type of service which may not be possible to be rendered cost effectively without ICT. The activity could be internal to the organization i.e. meant to increase the operational efficiency through work force residing within the organization or could be outsourced. The outsourced or cross-border ICT enabled services is now receiving greater attention as this category of ICTES has a great potential for growth and contribution towards employment opportunities in Kerala.

A Survey of ICTES

It is difficult to prepare an exhaustive list of ICTES that our industrial sector can take up because they are too many, and new ones keep popping up all the time while existing ones morph themselves into new incarnations. Following can be considered as the major divisions of ICTES which already exist or which have potential for evolving into segments:

- Digital Content Development services such as content development for digital libraries, digitizing manuscript collections of archives, archiving of back files of organizations, digitizing back volumes of journals, etc.
- Customer Interaction Services such as Call Centers
- Finance and Accounting Services such as back office data processing for Airlines, etc.
- Engineering and Design Services such as outsourced design activities
- Human Resources Services such as outsourced payroll preparations, etc.
- Animation for movies and TV serials, cartoon strips, etc.
- Translation, Transcription and Localization such as Medical Transcription Services.
- Network Consulting and Management covering outsourced network designing and maintenance.
- Data Search, Integration and Analysis covering areas such as preparation of legal data bases, research & preparation of reports based on data bases of past records, etc.
- Marketing Services such as bureaus for marketing products or services based on Call Centers or local market data bases, etc.
- Web Site Services for creating site contents, advertising, etc.
- Remote Education for utilizing IT infrastructure to strengthen formal education system for remote and expertise starved areas.
- Medical Consultancy by providing expert advises based on data or making available databases.
- Secretarial Services through bureaus, which utilize information technology for offering secretarial, help.
- The client coverage of these services is expected to be both indigenous as well as other (mostly) advanced countries.

Current and Projected Market

The client coverage of these services is expected to be both indigenous as well as other (mostly) advanced countries. As per the report published by

NASSCOM, on the basis of a study made by McKinsey, the world market for ICTES is expected to be over $ 140 billion in the year 2008.

ICTES in India:

Amongst others, the spectrum of ICTES applications already evident in India includes the following broad segments:

- Digital Content Development
- Online Education
- GIS Services
- Call Centers
- Medical Transcription
- Back Office Operations, Revenue Accounting and other ancillary operation
- Insurance Claims Processing
- Legal databases

Digital Content Development

Information and data now forms an integral part of every organization. In the scenario of increasing competition, and profit margins under pressure for the success an organization should enable to effectively use information. People have realized that paper records are not as handy or safe as CD-ROMs. Information must be stored in such media in which the storage is safe and the retrieval is quick. So the age of Digital Content Development has begun.

Digital Content Development is the process by which physical or manual records such as text, images, video, and audio are converted into digital forms. This is of paramount importance when projects need directions based on already achieved developments

Digital Content offers the benefits like; long term preservation of documents, orderly archiving of documents, easy & customized access to information, easy information dissemination through images & text, CD-ROMs, internet, intranets, and extranets.

The digitizing applications are rapidly evolving around the world, as computers are becoming an essential office and home equipment. Libraries, Corporate, Government, Armed Forces, Museums and Educational and Research organizations are looking at various efficient storage and distribution applications.

Some application areas of the Digital Content Development technology are as follows:

- Books
- Research Journals and Conference Papers
- Annual reports and price list
- Database archiving
- Movies, Sounds and High quality image preservation
- Electronic Catalogues & Brochures

- Product/Service Training Manuals
- Digital Archiving/Library

Benefits of Digitizing Content

There are many benefits to business organizations and others in digitization. Marked benefits are:

- Long-term preservation of the documents.
- Archiving of important documents at one place.
- Easy to use and customization access to the information.
- Quick and focused search of relevant information in terms of images and text.
- Easy dissemination of information in terms of images and text.
- Easy dissemination of information through CD-ROM, Internet, Intranets and extranets.

Digital Value Addition

Value added while digitizing content is

- Enhanced intellectual control through creation of new finding aids like indices.
- Search Mechanisms for images and text.
- Provision of enhanced resources in the form of widespread dissemination.
- Improved legibility of faded or stained documents; and
- Creation of a "virtual collection" through the flexible integration and synthesis of a variety of formats, or of related materials scattered among many locations.

Other Areas of Digital Content Development

CDROM Publishing: As information technologies associated with CD, Web and Multi-media are making rapid advances; Electronic Publishing opens hitherto unknown areas in presenting, expressing and propagating ideas.

Few years back CD-ROM had been looked as a ‘transient technology’, in the hope that web technology would ultimately take over CD-ROMs. However, rise in number of commercial and technical CD-ROM titles shows that it has a big future. Concept of ‘paperless library’ is now equated with CD-ROM Library. Its role in digital library will become more prominent with the spread of DVDs in coming years.

CD-ROM titles can be mainly categorized in to three:

Multimedia presentations: Audio and video CDs are produced in millions and becoming the most popular products of entertainments.

Indexing and abstracting services. E.g. Tree-CD by CABI, AGRIS by FAO.

Full text CDs: CD-ROM full text publishing is also flourishing. CD-ROMs are ideal for publishing reference works. Encyclopedia Britannica is now available in six CDs. Full texts of research reports and scientific papers on topics of academic interest are now days collected and published in CDs.

Now any thing that is electronic / digital is put in CD, calling them 'Electronic Publishing'. Standards are yet to be evolved for electronic publishing, especially for CD-ROM publishing. Since CDs hold huge store of information. Most of the CDs with full text are mere stack of thousands of files. This makes many full text CDs some thing like black- holes, where enormous quantity of information is roaming around inside with out finding a way to the out side world of information seekers. So development of search mechanisms, file organization packages and systems, and mechanisms that can process local scripts are going to be big business related to content development.

Then Abstract preparation, Transcription, Digital libraries, E-journals, Virtual libraries, virtual universities, etc also come under content development services.

Abstract preparation: Scientific and technical papers, project reports and business proposals etc are appearing in exponentially increasing numbers. Most of these are also finding their way to the Internet. To facilitate online search, and for other purposes abstracts of such papers have to be prepared. This work is increasingly being outsourced. Legal briefs and transcripts also generate huge volumes of abstracting jobs.

Legal Databases:

There is a constant need for lawyers who counsel cases to go through relevant laws, rulings and precedents in order to build up their case. This is usually done by very junior lawyers in legal firms. However, in the U.S. and other developed countries, even junior lawyers' services are highly priced. One of the ways to get around this hurdle is to have a readily accessible source of well-managed and intelligent information. Therefore, many legal firms have started to outsource this work to organizations that have large English speaking, lower priced workforce of trained lawyers. The job comprises working closely with the firms to create a database of their existing records, index on the basis of various useful and common understood criterions, keeping track of new documents being created and incorporating them into a database as per well established parameters. Lawyers can then simply use their computers to draw up a history of like cases and draw a clear plan of action.

Knowledge Mining and Data Warehousing

Data mining, also called knowledge discovery in databases, pertains to retrieval techniques used for handling voluminous mass of data. Very Large Databases Management Systems (VLDBMS) require new approaches to handling massive data the future databases would contain. Data mining ensures fast retrieval of specific data items from very large databases. It also attempts to enforce the condition that no stored data remains irretrievable.

This is an area in which hardly any significant work has been done. In the networked' society, the world would move from mining for coal or gold to mining for data, information and knowledge. The present data mining techniques are not ideally suited for information and knowledge discovery and there is a need to, look for new techniques. Developing such solutions will be a great industrial attraction in future. Traditional knowledge organization and classification techniques used in libraries promise to offer to form a basis for innovative computerized techniques for information and knowledge mining. This going to be a big business in the coming days.

On Line Education

On-line education market is currently considered a hotly growing sector. Studies by leading global market research firms have indicated that on-line education will follow an upward moving graph and that more and more organizations and individuals will implement this mode of training and that close to 92 percent of large organizations will implement network (intranet, Internet) training in 2008. It is also indicated that 41 percent of global majors have placed at least one course on-line for employees. In terms of products, systems and new service offerings, there are hundreds of such offerings available in the market for on-line and technology mediated learning.

The key contributors to the growth of this segment will be multinational companies that will be spending increasing amounts on Knowledge Management within their organizations.

The other key driver for growth would be education and training where mid-career professionals would be re skilling themselves on the Web. According to Peter Drucker, the growth in education spending won't be in traditional colleges and universities, but instead, would be ramped up by Web enabled continuing adult education. As all industry segments, including the Government go in for large-scale computerization, and as the software industry booms, the requirement for skilled manpower is also correspondingly shooting up. Some of the areas where major activities on the training front may take place are high-end platform specific certification courses.

Advances in technology are altering training delivery. Developments in hardware, intranets and the Internet, multimedia software and videoconferencing have created a tremendous potential for multiple-site delivery and bringing training to people's work sites.

On-line education is the next generation tool that has already started developing its roots in Kerala. It is expected to allow both corporates and the Government to deliver state-of-the-art training to personnel, students and home workers, and enable them to create the kind of skilled computer workforce required.
On the availability side, the technology now enables for providing training anytime, anywhere, to allow people to go through it at their own pace, to skip the sections that aren't relevant to them and to repeat sections if they need to.

The On-line education market in India is showing marked potential and will be a significant revenue earner for the industry in the years to come. Already a number of key initiatives are being taken by the industry to incorporate Net-based training as part of their curricula.

GIS Services

The Geographic Information Systems (GIS) industry is undergoing significant and far reaching changes. Today, GIS industry growth is being driven by rapidly spreading use of mapping and spatial data technology in brand new disciplines by customers representing new industries, markets and applications. At the same time, traditional GIS user organizations are leveraging their investments through integration of GIS with a range of corporate and departmental information systems.

A Geographic Information System (GIS) is a computer-based tool for mapping and analyzing things that exist and events that happen on the earth. GIS technology integrates common database operations such as query and statistical analysis with the unique visualization and geographic analysis benefits offered by maps. These abilities distinguish GIS from other information systems and make it valuable to a wide range of public and private enterprises for explaining events, predicting outcomes, and planning strategies.

In the strictest sense, GIS is a computer system capable of assembling, storing, manipulating, and displaying geographically referenced information, i.e. data identified according to their locations. Practitioners also regard the total GIS as including operating personnel and the data that go into the system

Some of the areas of application of GIS technology include agriculture, Business Marketing, Electric / Gas, Environment, Government, Forestry, Geology, Hydrology, Land use planning, Local Government, Mapping, Military, Risk Management, Site planning, Transportation, Water / Wastewater etc.

The GIS industry appears to be emerging from a developmental phase and moving towards exploitation.

Call Centers

A typical call center is a service center that has adequate telecom facilities, trained consultants, access to wide databases, Internet and other on-line

information support infrastructure to provide information and support to a customer. It operates to provide round the clock and year round service.

Call centers are normally operated by large airlines, by banks to provide services to the customers/ callers, by investment banks, mutual funds, telecom services, companies providing customized and high value services, IT products companies, amongst others. The primary determinant is any industry that has frequent interaction with a broad client base and intensive stakes in services being offered to the customer, where time and material value is of paramount importance.

Transcription: In this context, transcription means converting voice recordings into textual form. Traditionally, transcription confined to the legal and medical fields only. Now this has all changed with the introduction of global 24 hours year round Internet based transcription service being made available to anybody who has a cell phone. You may think aloud into your phone or dictate a proposal or report anything into it and a transcript of it wills comeback to your laptop within 2 hours, professionally transcribed and edited with 100% accuracy. This is far cry from anything, which the present voice recognition technology can offer.

Voice recording of seminars, conferences, board meetings and interviews etc also generate transcription work. All this together is clumped under the category, business transcription. This is the fastest growing area. This seminar may come out in print during valedictory session.

Medical Transcription:

In countries like the USA, doctors' time is at high premium. The current practice by doctors is to simply record their findings through a Dictaphone or some such device. These sound tracks are then sent through datacom lines to overseas companies (where costs are much lower) that employ "medical transcripionists" who hear these recordings, transcribe them into reports and send them back electronically through datacom lines. This has now become a specialized discipline with people needing adequate training. Turnaround time is often as low as two hours and, therefore, is often better than what the hospital may have achieved if it had done all of it in-house.

Initially, it was only being contracted out to companies that were in close proximity to these hospitals. Increasingly, however, to take advantage of lower costs, this work is being sent abroad from USA, UK etc. Because of the availability of high-speed satellite links, it is now entirely feasible to do this in Kerala in technical terms.

Building Cyber Shops: With the onset of e-commerce every vendor wants to open a shop in cyberspace. Like real shops merchandise has to be displayed attractively on the shelves in cyber shops also. This is a highly manpower intensive task involving creation of visuals, animation, text creation, sound clips etc. Cyber shop building is a very new and fast expanding activity. Digital artists, designers, visualizes, data conversion professionals etc can find gainful employment in this field.

Back Office Operations, Revenue Accounting, Other Ancillary Operations:

Industries such as Banks, Airlines require large-scale data entry and revenue accounting work to be done. For revenue accounting and other BackOffice accounting operations, paper documents/ raw data are sent to remote locations, which are used for data entry and necessary reconciliation. Using high-speed datacom links for their back office and data processing operations, these banks, airlines and other organizations with extensive data turnover and customer interface, are able to save costs and valuable resources. The prime concern of these companies is 100 percent availability of data and uptime of facility. This can be ensured through high-speed datacom links from India to the parent country. Over the last few years, there has been a steadily growing trend to outsource these services to major I.T. service providers, with contracts running into decades. The prime criteria for such projects are quality of organizational processes, availability of abundant manpower and ability to dedicate resources to clients' needs. India stands to gain from such a trend, as the Indian software industry has been able to make a mark and also has access to huge pool of skilled as well as semiskilled professionals with relative cost advantage.

Potential customers are those industries or sectors that have high information turnover coupled with need for efficient archiving of records and their frequent access. Some of the prominent potential clients would be from industries in:

- Insurance, Banking
- Public utilities, Telecom
- Legal, Transportation, Manufacturing
- Publishing
- Police departments
- Government agencies, Municipalities
- Hospitals

Insurance Claims Processing:

Large insurance companies get countless claims. Since there are well laid down rules on how they are to be processed such processing can be done anywhere, as long as there is availability of graduates who can read and write English in large numbers, a few doctors and a few accountants. As a result, to save costs, large insurance companies in the U.S. are now outsourcing a lot of this work. This is another good opportunity area.

Infrastructure Requirements of IT enabled Services

Infrastructure requirements for ICTES are listed below. Detailed discussions of those aspects do not come under the scope of this paper.

Main Frame -> High speed leased Lines -> Offshore software development -> transcription Services -> frame Relay

Internet -> Internet TCP/IP Lease Line -> Web Enabled application Development -> Dial Up Internet Services

Private Enterprise Network -> Satellite Links -> Customer side Earth station -> Offshore Maintenance

VSNL, BSNL, Reliance and many other groups in public and private sector now provides these infrastructure facilities in Kerala also.

Software Technology Parks (STP) have to be established. STP will; register one as an exporter of software/IT enabled services, issue necessary licenses that will enable one to import capital equipments duty free, inspect and certify exports so that the export proceeds can legally be accepted according to RBI regulations, give one expert advice on all technical and communication related issues, offer satellite communication links at competitive rates, channelise marketing enquiries from over seas clients to the entrepreneur and help one to market services to potential clients through several national international forums.

Challenges

The challenges ICTES entrepreneurs may have to face will be related to implementing security systems, engineering the organizations ERP, countrywide global networking, cyber laws and role of Regulatory Agencies/Government

Conclusion

There is little doubt that we are at the threshold of a new world order which may set in within the next one or two decades. A networked society would emerge as the central theme of living with the society's trade, economy, occupation, development, education, culture and leisure all centered on networking. As information/knowledge will have to play the crucial role in all these fields those who deal with information services will be better exposed to technologies that help to success, store and disseminate utilize information. The will play a crucial role in development and will have new opportunities for and fields to venture into.

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