U.P.Rajarshi Tandon Open
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M.Com.-206

Management Information System

Block 1

ENTERPRISE SYSTEMS

Unit 11
Knowledge Management and e-governance

Unit 12
Nature of IT decision

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परिमापक

अनुवाद की स्थिति में

मूल लेखक	अनुवाद
मूल सम्पादक	भाषा सम्पादक
मूल परिमापक	परिमापक

सहयोगी टीम

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नोट : पाठ्य सामग्री में मुद्रित सामग्री के विचारों एवं आकड़ों आदि के प्रति विश्वविद्यालय उत्तरदायी नहीं है।

प्रकाशन उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, इलाहाबाद

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unit eleven deals knowledge management and e-governance. Unit twelve deals with nature of IT decision.

UNIT-11 Knowledge Management and e- governance

Unit Structure

11.0 Objective

Knowledge management is emerging as a key concern of organizations. Enterprises are realising how important it is to "know what they know" and be able to make maximum use of the knowledge. This knowledge resides in many different places such as: databases, knowledge bases and are distributed right across the enterprise.

11.1 Introduction

Most traditional company policies and controls focus on the tangible assets of the company and leave unmanaged their important knowledge assets.

All too often one part of an enterprise repeats work of another part simply because it is impossible to keep track of, and make use of, knowledge in other parts. Enterprises need to know:

- What their knowledge assets are;
- How to manage and make use of these assets to get maximum return.

Success in an increasingly competitive marketplace depends critically on the quality of knowledge which organisations apply to their key business processes. For example the supply chain depends on knowledge of diverse areas including raw materials, planning, manufacturing and distribution. Likewise product development requires knowledge of consumer requirements, new science, new technology, marketing etc.

The challenge of deploying the knowledge assets of an organisation to create competitive advantage becomes more crucial as:

- The marketplace is increasingly competitive and the rate of innovation is rising, so that knowledge must evolve and be assimilated at an ever faster rate.
- Corporations are organising their businesses to be focused on creating customer value. Staff functions are being reduced as are management structures. There is a need to replace the informal knowledge management of the staff function with formal methods in customer aligned business processes.
- Competitive pressures are reducing the size of the workforce which holds this knowledge.
- Knowledge takes time to experience and acquire. Employees have less and less time for this.
- There are trends for employees to retire earlier and for increasing mobility, leading to loss of knowledge.
- There is a need to manage increasing complexity as small operating companies are trans-national sourcing operations.

A change in strategic direction may result in the loss of knowledge in a specific area. A subsequent reversal in policy may then lead to a renewed requirement for this knowledge, but the employees with that knowledge may no longer be there.

11.1.1 Definition

Knowledge assets are the knowledge regarding markets, products, technologies and organisations, that a business owns or needs to own and which enable its business processes to generate profits, add value, etc.

Knowledge management is not only about managing these knowledge assets but managing the processes that act upon the assets. These processes include: developing knowledge; preserving knowledge; using knowledge, and sharing knowledge.Therefore, **Knowledge management** involves the identification and analysis of available and required knowledge assets and knowledge asset related processes, and the subsequent planning and control of actions to develop both the assets and the processes so as to fulfil organisational objectives.

Knowledge management (KM) comprises a range of strategies and practices used in an organisation to identify, create, represent, distribute, and enable adoption of insights and experiences Such insights and experiences comprise knowledge, either embodied in individuals or embedded in organisations as processes or practices. More recently, other fields have started contributing to KM research; these include information and media, computer science, public health, and public policy. Many large companies and non-profit organisations have resources dedicated to internal KM efforts, often as a part of their business strategy, information technology, or human resource management departments. Several consulting companies also exist that provide strategy and advice regarding KM to these organisations.

Knowledge management efforts typically focus on organisational objectives such as improved performance, competitive advantage, innovation, the sharing of lessons learned, integration and continuous improvement of the organisation. KM efforts overlap with organisational learning, and may be distinguished from that by a greater focus on the management of knowledge as a strategic asset and a focus on encouraging the sharing of knowledge. It is seen as an enabler of organisational learning and a more concrete mechanism than the previous abstract research.

11.2 Why is Knowledge Management Difficult?

There are many problems associated with identifying these knowledge assets and being able to use them and manage them in an efficient and cost-effective manner. Enterprises need:

- to have an enterprise-wide vocabulary to ensure that the knowledge is correctly understood;
- to be able to identify, model and explicitly represent their knowledge;
- to share and re-use their knowledge among differing applications for various types of users; this implies being able to share existing knowledge sources and also future ones;
- to create a culture that encourages knowledge sharing.

Knowledge engineering methods and tools have come a long way towards addressing the use of a company's knowledge assets. They provide disciplined approaches to designing and building knowledge-based applications. There are tools to support the capture, modelling, validation, verification and maintenance of the knowledge in these applications. However these tools do not extend to supporting the processes for managing knowledge at all levels within the organisation.

At the strategic level the organisation needs to be able to analyse and plan its business in terms of the knowledge it currently has and the knowledge it needs for future business processes. At the tactical level the organisation is concerned with identifying and formalising existing knowledge, acquiring new knowledge for future use, archiving it in organisational memories and creating systems that enable effective and efficient application of the knowledge within the organisation. At the operational level knowledge is used in everyday practice by professional personnel who need access to the right knowledge, at the right time, in the right location.

11.3 A Knowledge Management Framework

The knowledge management framework we use was originally based on work by vanderSpek and de Hoog. It covers-

Techniques to Manage Knowledge

We believe that the knowledge modelling techniques that exist to support the use of the knowledge, along with traditional business management techniques, provide a starting point to manage the knowledge assets within a company.

Therefore the techniques we employ for managing knowledge within the organisation are drawn from these two distinct areas:

- the techniques that have been used previously from business management, for example, SWOT (Strengths Weaknesses Opportunities Threats) analysis, balanced scorecards (Kaplan, Robert S.; Norton, David P. (1996)), modelling languages such as: IDEF (Process Flow and Object State Description Capture Method, Mayer, R., Cullinane, T., de Witte, P., Knappernberger, W., Perakath, B., & Wells, S. (1992)) and RADs (Role Activity Diagrams, Ould, M. (1993));
- the knowledge techniques that have been used previously for the disciplined development of knowledge-based applications (Benus, B. (1993) and Schreiber, A. T., Akkermans, J. M., Anjewierden, A. A., De Hoog, R., Van De Velde, W., &Wielinga, B. J. (1998)).

Our recommended approach is a multi-perspective modelling approach. Several models need to be developed, each of which represents a different perspective on the organisation which can be characterised as "How, What, Who, Where, When and Why"

- How the organisation carries out its business - modelling the business processes
- What the processes manipulate - modelling the resources
- Who carries out the processes - modelling capabilities, roles and authority
- Where a process is carried out - modelling of the communication between agents
- When a process is carried out - this specifies the control over processes

Knowledge Management Roadmaps

Knowledge Asset Road Maps highlight the critical knowledge assets required by an organisation to meet market needs five to ten years in the future. They are mechanisms enabling organisations to visualise their critical knowledge assets, the relationships between these and the skills, competencies and technologies required to meet future market demands.

They allow:

- individual knowledge management actions to be defined and justified in terms of their contribution to the overall aims.
- effective communication of the work and progress on the programme to the participants and observers.
- management aids for those involved in carrying out the programme and measuring its progress.
- more effective communication between users, researchers, technicians, managers and directors involved in the various aspects of the programme.
- sensible decisions to be taken on the opportunities for further exploiting the results of the programme.
- the identification of knowledge gaps that need to be filled.

The Road Map is a living document regularly updated and serves as a framework for the monitoring of the knowledge management programme. The document reflects the current state of the interrelationships between work in progress and proposed for the future and the overall milestones and aims of the programme. Our work on knowledge management road map is more fully described .

IT Support for Knowledge Management

AIAI, at the University of Edinburgh is concerned with how specific aspects of AI, namely modelling, ontologies and planning techniques can support knowledge management. These techniques allow an integrated support framework to be developed for knowledge management based on adaptive workflow techniques.

11.4 Elements of KM

KM involves processes of coding, classifying, storing, organizing, retrieving, analyzing and harvesting.

1. **Coding** – We have to identify the elements of our experience that are relevant for our learning and put them into a language that we can communicate with ourselves and others.
2. **Classifying, Organizing and Storing** –These are three very integrated processes. In our memory we can store practically infinite information, yet we frequently cannot recall them. The failure to recall is most probably not due to the loss of memory but the lost of the link to such memory. The failure of retrieval is most

likely the loss of the information about how things are stored. The analogy in IT is that when we delete a file from our hard disk, the file is not actually deleted; it is the entry in the file directory that is deleted. The data of the file still sits somewhere in the disk. Thus, the whole issue is who we would classify our knowledge, organize, and store them. Taxonomy is the term frequently used for classification. For example, social work knowledge can be classified as casework, group work, and community work; or micro and macro practices, etc.

3. **Retrieving** – The efficiency of retrieval depends very heavily on how knowledge is classified, organized and stored. In IT terms, it also depends on the power of the search engine available and the search strategy adopted by individuals.
4. **Analyzing** – This experience can be of use only if we can analyze and evaluate them. This is even more important in an organization where there is a variation in expertise. Amateur or inexperienced staff may not be able to differentiate the level of usefulness of experience and knowledge. They will rely heavily on the analysis of the experts to screen and utilize the useful information.
5. **Harvesting** –The volume of knowledge can be beyond grasp and optimal utilization. Periodical review and summarization of existing experience is necessary to make optimal use of the large volume of experience.

11.5 Multidisciplinary Nature of KM

Knowledge management draws upon a vast number of diverse fields such as:

- Organizational science.
- Cognitive science.
- Linguistics and computational linguistics.
- Information technologies such as knowledge-based systems, document andinformation management, electronic performance support systems, and database technologies.
- Information and library science.
- Technical writing and journalism.
- Anthropology and sociology.
- Education and training.
- Storytelling and communication studies.
- Collaborative technologies such as Computer Supported Collaborative Work
- and groupware, as well as intranets, extranets, portals, and other web technologies.

11.6 Key to the success of KM

1. The development of knowledge structure and taxonomy within an organization provides the platform for coding, classification, organizing and storing of information.
2. The culture of sharing is the key to success of KM. Experience sits in individuals. It requires efforts for individuals to put down their experience into codified information, such as reports, so that their experience can be accessed by others. However, having experience is one thing, but to communicate such experience it demands substantial effort to translate and present them to the others. Thus, the culture of sharing of experience is crucial to the success of the development of KM in an organization.

11.7 Types of knowledge

Knowledge in organization is often classified into two types: explicit and tacit. Explicit knowledge is knowledge that can be captured and written down in document or databases. Examples of explicit knowledge include instruction manuals, written procedures, best practices, lessons learned and research findings. Explicit knowledge can be categorized as either structured or unstructured.

Documents, databases, and spreadsheets are examples of structured knowledge, because the data or information in them is organized in a particular way for future retrieval. In contrast, e-mails, images, training courses, and audio and video selections are examples of unstructured knowledge because the information they contain is not referenced for retrieval.

Tacit knowledge is the knowledge that people carry in their heads. It is much less concrete than explicit knowledge. It is more of an "unspoken understanding" about something, knowledge that is more difficult to write down in a document or a database.

An example might be, knowing how to ride a bicycle – you know how to do it, you can do it again and again, but could you write down instructions for someone to learn to ride a bicycle? Tacit knowledge can be difficult to access, as it is often not known to others. In fact, most people are not aware of the knowledge they themselves possess or of its value to others. Tacitknowledge is considered morevaluable because it provides context for people, places, ideas and experiences. It generally requires extensive personal contact and trust to share effectively.

Old Knowledge and New Knowledge:

Most knowledge management strategies generally have one (or sometimes both) of two thrusts. The first is to make better use of the knowledge that already exists within the organization, and the second is to create new knowledge.

Making better use of the knowledge that already exists within an organization ("old" knowledge) often begins with "knowing what you know". Very often leading managers comment: "if only we knew what we knew".

Too frequently, people in one part of the organization reinvent the wheel or fail to solve a problem because the knowledge they need is elsewhere in the organization but not known or accessible to them. Hence the first knowledge management initiative of many companies is that of finding out what they know, and taking steps to Transfer StrategiesKnowledge can be transferred via:

- documents
- internet/intranet
- groupware
- databases
- knowledge bases
- face to face communication

The best ways to absorb tacit knowledge is to be present in the domain where tacit knowledge is practiced. This can be done through job rotation, job training, and on-site learning. This involves on-site decision making, absorbing the mechanics, and the heuristics as they occur, and finally coming up with a new knowledge base that emulates the domain in a unique way. However, the main limitation of such strategy is time.

11.7.1 Types of Knowledge Transfer

- Collective Sequential Transfer
- Explicit Inter team Knowledge Transfer
- Tacit Knowledge Transfer

11.8 Principles and Processes of Knowledge Management

Right knowledge, Right place, Right time:

Some people mistakenly assume that knowledge management is about capturing all the best practices and knowledge that people possess and storing it in a computer system in the hope that one day it will be useful. In fact this is a good example of what knowledge management is not about! Consider this: how often has information or knowledge been pushed at you when you don't need it -- paper, emails, training, another irrelevant meeting? Then later, when you do need it, you vaguely rememberseeing something relevant but can't find it. Some surveys suggest that professional workers spend ten per cent of their time looking for information. they know is somewhere. And if what you want is in people's heads, and they're not always around, how can you access it when you need it? What if you don't even know whose head it's in, or if they'd be willing to share it with you? In a nutshell, good knowledge management is all about getting the right knowledge, in the right place, at the right time.

The right knowledge is the knowledge that you need in order to be able to do your job to the best of your ability, whether that means diagnosing a patient, making a decision, booking a referral, answering a patient's question, administering a treatment, training a new colleague, interpreting a piece of research, using a computer system, managing a project, dealing with suppliers etc. Information and knowledge can usually be found in a whole variety of places research papers, reports and manuals, databases etc. Often it will be in people's heads yours and other people's. The right place, however, is the point of action or decision the meeting, the patient helpline, the hospital bedside, behind the reception desk and so on. The right time is when you (the person or the team doing the work) need it.

Ways with knowledge: collecting and connecting

Knowledge management programmes tend to have both a "collecting" and a "connecting" dimension.The collecting dimension involves linking people with information. It relates to the capturing and disseminating of explicit knowledge through information and communication technologies aimed at codifying, storing and retrieving content, which in principle is continuously updated through computer networks. Through such collections of content, what is learned is made readily accessible to future users. However it has its limitations. Even where comprehensive collections of materials exist, effective use may still need knowledgeable and skilled interpretation and subsequent alignment with the local context to get effective results, just as reading a newspaper article on brain surgery does not qualify or enable a reader to conduct brain surgery. An organisation that focuses completely on collecting and makes little or no effort at connecting tends to end up with a repository of static documents.The connecting dimension involves linking people with people – specifically people who need to know with those who do know, and so enhancing tacit knowledge flow through better human interaction, so that knowledge is diffused around the organisation and not just held in the heads of a few. Connecting is necessary because knowledge is embodied in people, and in the relationships within and between organisations. Information becomes knowledge as it is interpreted in the light of the individual's understandings of the particular context. Examples of connecting initiatives include skills directories and expert directories – searchableonline staff directories that give much more detail about who does what and who knows what, collaborative working, communities of practice – networks of people with a common interest, and various "socialisation" activities . This connecting dimension tends to be the main emphasis programmes. However an organisation that focuses entirely on connecting, with little or no attempt at collecting, can be very inefficient. Such organisations may waste time in "reinventing wheels". Most knowledge management programmes aim at an integrated approach to managing knowledge, by combining the benefits of both approaches and achieving a balance between connecting individuals who need to know with those who do know, and collecting what is learned as a result of these connections and making that easily accessible to others. For example, if collected documents are linked to their authors and contain other interactive possibilities, they can become dynamic and hence much more useful.

Ways with knowledge: people, processes and technology

One popular and widely-used approach is to think of knowledge management in terms of three components, namely people, processes and technology:

People: Getting an organisation's culture "right" for knowledge management is typically the most important and yet often the most difficult challenge. Knowledge management is first and foremost a people issue. Does the culture of your organisation support ongoing learning and knowledge sharing? Are people motivated and rewarded for creating, sharing and using knowledge? Is there a culture of openness and mutual respect and support? Or is your organisation very hierarchical where "knowledge is power" and so people are reluctant to share? Are people under constant pressure to act, with no time for knowledge-seeking or reflection? Do they feel inspired to innovate and learn from mistakes, or is there a strong "blame and shame" culture?

Processes: In order to improve knowledge sharing, organisations often need to make changes to the way their internal processes are structured, and sometimes even the organisational structure itself. For example, if an organisation is structured in such a way that different parts of it are competing for resources, then this will most likely be a barrier to knowledge sharing. Looking at the many aspects of "how things are done around here" in your organisation, which processes constitute either barriers to, or enablers of, knowledge management? How can these processes be adapted, or what new processes can be introduced, to support people in creating, sharing and using knowledge?

Technology: A common misconception is that knowledge management is mainly about technology getting an intranet, linking people by e-mail, compiling information databases etc. Technology is often a crucial enabler of knowledge management.it can help connect people with information, and people with each other, but it is not the solution. And it is vital that any technology used "fits" the organisation's people and processes otherwise it will simply not be used.

These three components are often compared to the legs of a three legged stool if one is missing, then the stool will collapse. However, one leg is viewed as being more important than the others people. An organisation's primary focus should be on developing a knowledge-friendly culture and knowledgefriendlybehaviours among its people, which should be supported by the appropriate processes, and which may be enabled through technology.

11.9 Why is km important today?

The major business drivers behind today's increased interest in and application of KM lie in four key areas:

Globalization of business. Organizations today are more global—multisite, multilingual, and multicultural in nature.

Leaner organizations. We are doing more and we are doing it faster, but we also need to work smarter as knowledge workers, adopting an increased pace and workload.

Corporate amnesia. We are more mobile as a workforce, which creates problems of knowledge continuity for the organization and places continuous learning demands on the knowledge worker. We no longer expect to spend our entire work life with the same organization.

Technological advances. We are more connected. Advances in information technology not only have made connectivity ubiquitous but have radically changed expectations. We are expected to be "on" at all times, and the turnaround time in responding is now measured in minutes, not weeks.

11.9.1 KM for Individuals, Communities, and Organizations

Knowledge management provides benefits to individual employees, to communities of practice, and to the organization itself. This three-tiered view of KM helps emphasize why KM is important today

For the **individual,** KM:

* Helps people do their jobs and save time through better decision making and problem solving.
* Builds a sense of community bonds within the organization.
* Helps people to keep up to date.
* Provides challenges and opportunities to contribute.

For the **community** of practice, KM:

* Develops professional skills.
* Promotes peer-to-peer mentoring.
* Facilitates more effective networking and collaboration.
* Develops a professional code of ethics that members can follow.
* Develops a common language.

For the **organization,** KM:

* Helps drive strategy.
* Solves problems quickly.
* Diffuses best practices.
* Improves knowledge embedded in products and services.
* Cross-fertilizes ideas and increases opportunities for innovation.

* Enables organizations to stay ahead of the competition better.
* Builds organizational memory.

11.10 What is E-Governance?

It is the use of a range of modern Information and Communication Technologies such as Internet, Local Area Networks, mobiles etc. by Government to improve the effectiveness, efficiency, service delivery and to promote democracy.

E-Governance is the application of Information and Communication Technology (ICT) for delivering Government Services, exchange of information, communication transactions, integration various stand-alone systems and services between Government and Citizens (G2C), Government and Business (G2B) as well as back office processes and interactions within the entire Government frame work.

11.11 Types of E- governance

- G2C (Government to Citizens)
- G2B (Government to Businesses)
- G2E (Government to Employees)
- G2G (Government to Governments)
- C2G (Citizens to Governments)

Through the e-Governance, the Government services will be made available to the citizens in a convenient, efficient and transparent manner. The Government being the service provider, it is important to motivate the employees for delivering the services through ICT. To achieve this, the Government employees are being trained on technology and started realising the advantage of ICT. The aim is to make them thorough with e-Governance applications and responsive to the technology driven administration.

Evolution of e-Governance is a highly complex process requiring provisioning of hardware, software, networking, process-re-engineering and change management. In a truly e-Governed system, there should be minimal human intervention and decision on cases. It should be 'system driven' rather than 'individual driven', thereby curtailing the scope for subjective interpretation in the process of disposal of cases, particularly routine cases.

Governance: An Information perspective

- Representative democracy relies on supposition that best way to make a decision is wider participation for all its citizens having access to relevant information.
- Government is by nature an information intensive organization.
- Information is power and information management is political.

Governance in IT framework

- Expansion of Internet and electronic commerce, is redefining relationships among various stake holders in the process of Governance.
- A new model of governance would be based upon the transactions in virtual space, digital economy and dealing with knowledge oriented societies.
- Electronic Governance is an emerging trend to re-invent the way the Government works.

E-Governance Focus on:

- Greater attention to improve service delivery mechanism
- Enhancing the efficiency of production
- Emphasis upon the wider access of information

11.12 E-Governance vs. E-Government

"Government's foremost job is to focus society on achieving the public interest."

"Governance is a way of describing the links between government and its broader environment - political, social and administrative."

GOVERNMENT	GOVERNANCE
Superstructure	Functionality
Decisions	Processes
Rules	Goals
Rules	Performance
Implementation	Coordination
Outputs	Outcomes
e-Government	**e-Governance**
electronic service delivery	electronic consultation
electronic workflow	electronic controllership
electronic voting	electronic engagement
electronic productivity	networked societal guidance

Table: 3.1 Difference between e-governance and e- government

11.13 Why e-Governance?

E-Government can transform citizen service, provide access to information to empower citizens, enable their participation in government and enhance citizen economic and social opportunities, so that they can make better lives, for themselves and for the next generation.

11.14 Challenges in e-governance

- Trust

- Resistance to change
- Digital Divide
- Cost
- Privacy and Security

11.15 Information Access and Service Delivery models of e-governance

- Broadcasting Model
- Critical Flow Model
- Comparative Analysis Model
- Interactive Service Model

11.16 Issues in the e-governance implementation

Technology Issues

- Three basic elements
- infrastructure layer
- application layer
- integration technology
- Application layer is made up of software and services that either extend the site's performance or make it easier to manage.
- The integration layer is to use the Internet to tie together practically all the traditional disciplines associated with various services provided by the web site.

Infrastructure layer

Carrier

- Basic element by which site is connected to the internet.
- ISPs provide internet connection and bandwidth required for the sites.

Hosting centre

- specially designed rooms for equipment. E-governance also. looking for such specially designed rooms which are cost effective and efficient.

Three more layers of infrastructure are needed for the better performance of the web sites load balancing, security layer, and caching.

Basic Application Layer

- Content management system makes it easy to create and organize web content
- Personalization system stores the visitor/ citizen profile while they visit the site.
- Transaction engine allows the visitor to configure his/her request and facilitates to pay by credit card or other means.

- Site analysis system stores information such as how many visitors came in every month.
- Campaign management system goes beyond the site analysis and helps to launch certain marketing efforts.
- Customer support system gives a helping hand to a visitor who has trouble using a site.

Integration technology

- Application integration enables the user to talk with the "legacy" system.
- Sales integration collects all sales data in various government centers in real time and provides remarkable opportunities to forecast and track the visitors.
- Once the transactions are completed over the web, the transaction details are to be plugged into accounting system. This is facilitated by financials system

Application software

- The three-step method is proposed
- Where are we
- Where we want to go
- How do we get there

Management of Change related Issues

- Important to investigate how the business of government and the nature of governance itself change in the digital networking conomy.

11.17 E-Governance Projects in india

- E-Seva(electronic Seva)in Andhra Pradesh
- E-Sampark in Chandigarh
- E-Mitra in Rajasthan
- E-Mamta (Mother & Child Tracking System) in Gujrat
- ePension (Pension Disbursement System) in Himachal Pradesh
- Suwidha (Single User Window Disposal Help Line for Application) in Panjab
- Gyandoot in Madhya Pradesh
- KHAJANE (Online Treasury System) in Karnataka
- LokMitra in Himachal Pradesh

11.18 Summary

The knowledge management is a techniques to Manage Knowledge, Knowledge Management Roadmaps, IT Support for Knowledge Management. KM involves processes of coding, classifying, storing, organizing, retrieving, analyzing and harvesting. KM is Multidisciplinary in Nature. Knowledge in organisation is often classified into two types: explicit and tacit. There are several principles of it e.g. Right knowledge, Right place, Right time. The major business drivers behind today's increased interest in and application of KM lie in four key areas: *Globalization of business, Leaner organizations, corporate amnesia and Technological advances. It* provides benefits to individual employees, to communities of practice, and to the organization itself. This three-tiered view of KM helps emphasize why KM is important today. E-Governance is the application of Information and Communication Technology (ICT) for delivering Government Services, exchange of information, communication transactions, integration various stand-alone systems and services between Government and Citizens (G2C), Government and Business (G2B) as well as back office processes and interactions within the entire Government frame work. There are several issues in the e-governance implementation. Some popular E-Governance projects in india are E-Seva (electronic Seva) in Andhra Pradesh, E-Sampark in Chandigarh, E-Mitra in Rajasthan etc.

11.19 Self Assessment Test

1. What is knowledge management? Define its key elements.
2. Differentiate e-governance with e- government the types of e-governance
3. What is E-Governance? And why e-governance is used?
4. What are the types of knowledge and explain the importance of knowledge management in to-days life.
5. What are the main Issues in the e-governance implementation?
6. Give the name of four real projects in India.

11.20 Further Readings

1. E-Gov 2.0 Policies- Processes and Technologies 1st Edition,Tata McGraw - Hill publishing company ltd., by Jaijit Bhattacharya
2. E - Governance: Concepts and Case Studies, PHI ,by C.S.R
3. Corporate Governance: Principles, Polices and Practices, 2/e, Pearson Publication, by A.C. Fernandox
4. Knowledge Management : Enabling Business Growth, TMH, Ganesh Natarajan , Sandhya Shekhar

UNIT-12 Nature of IT decision

Unit Structure

12.0 Objective

Making effective decisions, as well as recognizing when a bad decision has been made and quickly responding to mistakes, is a key ingredient in organizational effectiveness.Some experts believe that decision making is the most basic and fundamental of all managerial activities. Decision making is most closely linked with the Planning function. However, it is also part of Organizing, Leading and Controlling.

12.1 Introduction

The choice of IT makes a qualitative diff in the decision making process Wrong choice of IT would kill a good MIS design IT choice is governed by the requirement of the mission critical application of the org The IT affects the people, the processes & productivity of the org The choice of IT is a strategic decision making for long term impact on the effectiveness of the MIS.

Determining the impact of information technology ("IT") on non-profits' organizational structure and outcomes has become a crucial task for non-profit's and grant makers. With the speed of communications and the pace of business constantly on the increase, non-profit's and grant makers need to know how technology is affecting them and their grantees—what they need, what they could be doing better, whether their

IT systems are helping or hindering them in achieving their missions. But certain knowledge of the impact of technology on an organization or a program is like a pot of gold at the end of the rainbow: its value is obvious, and it looks easy to find, but the path toward it is hazy and ephemeral.

12.2 Strategic Decision

One of the essential parts of creating and running a small business is creating a mission or vision for the business and a set of goals the company aims to achieve. Strategic decision making, or strategic planning, describes the process of creating a company's mission and objectives and deciding upon the courses of action a company should pursue to achieve those goals.

12.2.1 Strategic Decision Making

Strategic deals with the long-run future of the entire organization and have three characteristic

1. *Rare-* Strategic decisions are unusual and typically have no precedent to follow.
2. *Consequential-*Strategic decisions commit substantial and demand a great deal of Commitment.
3. *Directive-* Strategic decisions set precedents for lesser decisions and future actions throughout the organization.

Four decision making conditions

Certainty

- decision makers know which objectives they want to achieve
- alternatives are clearly defined
- knowledge of outcomes is complete
- all information needed is fully available

Risk

- *decision makers know which objectives they want to achieve*
- *alternatives are clear*
- *likelihood of outcomes is subject to chance*
- good information is available

Uncertainty

- decision makers know which objectives they want to achieve
- alternatives are incomplete
- likelihood of outcomes is not understood
- information is incomplete

Ambiguity

- objectives to be achieved are not clear
- alternatives are difficult to define
- information about outcomes is unavailable

12.2.2 Strategic Planning Basics

Strategic decision making is an on-going process that involves creating strategies to achieve goals and altering strategies based on observed outcomes. For example, the managers of a pizza restaurant might have the objective of increasing sales and decide to implement a strategy of offering lower prices on certain products during off hours to attract more customers. After a month of pursuing the new strategy, managers can look at sales data for the month and evaluate whether the strategy resulted in increasing sales and then choose to keep the new price scheme or alter their strategy.

SWOT Analysis

A SWOT analysis is a common strategic planning tool that managers can use to examine internal and external factors that may influence the ability to achieve goals. A SWOT analysis involves creating a list of a business's strengths and weaknesses and the external threats and opportunities it faces. Identifying strengths, weaknesses, opportunities and threats can help managers create strategies to exploit strengths or minimize weaknesses to take advantage of opportunity and avoid threats.

Cost-Benefit Analysis

A cost-benefit analysis is a strategic decision making tool that can help managers choose between two or more different courses of action. In a cost-benefit analysis, managers estimate the amount of revenue they expect a certain project to generate and the expected costs of pursuing the project. By estimating the costs and benefits associated with several different projects, managers can determine which project is expected to produce the greatest benefit.

Outside Advice

While entrepreneurs and small business owners may be experts in their chosen industry, they are often not experts in actually managing businesses. Business owners often seek outside help to aide in the strategic decision making process. The Small Business Administration says that mentors can be a vital source of advice for small business owners. Some businesses hire professional consultants to help them make strategic decisions.

Observable Behaviour In Making Sound Decisions:

The following actions have been observed in effective decision-making.

1. Gather information before making a decision.
2. Cross check information sources for agreement.
3. Identify alternatives/contingencies so that possible solutions may be explored.
4. Discuss consequences of decisions in an effort to enhance the decision-making process.
5. Provide the rationale for decisions

Following steps are strategic decision-making process is proposed

1. Evaluate current performance results
2. Review corporate governance

3. Scan the external environment
4. Analyze strategic factors (SWOT)
5. Generate, evaluate and select the best alternative strategy
6. Implement selected strategies
7. Evaluate implemented strategies

Managers in charge of strategic decision-making are capable of providing only satisfactory solutions to problems. Most human decision makers "whether individual or organizational, are concerned with the discovery and selection of satisfactory alternatives; only in exceptional cases are concerned with the discovery and selection of optimal alternatives" As a result, it appears that strategy must deal with that appears to satisfy a basic set of criteria

Decision-making under uncertainty is the central idea in strategy and it consists of lots of strategic decisions.

The development of effective and successful strategies requires the development of three organizational skills:

- anticipating the shape of the uncertain future. This is no easy task since uncertainty involves not only uncertainty about the probabilities of the alternatives available, but also uncertainty about the probability distribution itself;
- generating new alternatives for strategic decisions (i.e. through the role of imagination and intuition in decision making);
- implementing new decisions to make adaptation more effective. Adaptation refers not only the level of the organization adapting to its environment, but also at the individual level ("What a person wants and wants and likes")

Strategic planning is an organizational management activity that is used to set priorities, focus energy and resources, strengthen operations, ensure that employees and other stakeholders are working toward common goals, establish agreement around intended outcomes/ results, and assess and adjust the organization's direction in response to a changing environment. It is a disciplined effort that produces fundamental decisions and actions that shape and guide what an organization is, who it serves, what it does, and why it does it, with a focus on the future. Effective strategic planning articulates not only where an organization is going and the actions needed to make progress, but also how it will know if it is successful.

Strategic management is the comprehensive collection of ongoing activities and processes that organizations use to systematically coordinate and align resources and actions with mission, vision and strategy throughout an organization. Strategic management activities transform the static plan into a system that provides strategic performance feedback to decision making and enables the plan to evolve and grow as requirements and other circumstances change.

12.2.3 Steps in Strategic Planning & Management

There are many different frameworks and methodologies for strategic planning and management. While there is no absolute rules regarding the right framework, most follow a similar pattern and have common attributes.

1. analysis or assessment, where an understanding of the current internal and external environments is developed,
2. strategy formulation, where high level strategy is developed and a basic organization level strategic plan is documented
3. strategy execution, where the high level plan is translated into more operational planning and action items, and
4. Evaluation or sustainment / management phase, where ongoing refinement and evaluation of performance, culture, communications, data reporting, and other strategic management issues occurs.

12.3 Configuration Design

Configuration design is a kind of design where a fixed set of predefined components that can be interfaced (connected) in predefined ways is given, and an assembly of components selected from this fixed set is sought that satisfies a set of requirements and obeys a set of constraints. It includes the design of Data type, Data Volume, RDBMS & 4GL Process Speed, Data Sharing, Query processing, Interface & gateways, security & Integrity, Comm. Protocol ,Storage capacity, I/O operations

The associated *design configuration problem* consists of the following three constituent tasks:

1. **Selection** of components,
2. **Allocation** of components, and
3. **Interfacing** of components (design of ways the components interface/connect with each other).

Types of knowledge involved in configuration design include:

- Problem-specific knowledge:
- Input knowledge:
- Requirements
- Constraints
- Technology
- Case knowledge
- Persistent knowledge (knowledge that remains valid over multiple problem solving sessions):
- Case knowledge
- Domain-specific, method-independent knowledge
- Method-specific domain knowledge
- Search-control knowledge

There are two major parts of the configuration design: Physical Design and Parametric Design.

- What is the Physical Design process? It is the design step to convert the Conceptual Design into realizable physical elements: circuits, software, mechanical structures, etc.

- What is a Parametric Design process? It is the design step to specify the physically variable parameters: dimensions, voltage levels, current levels, operating frequencies,

12.4 Evaluation

Evaluation is the process of analyzing, reflecting upon, and summarizing assessment information, and making judgments and/or decisions based on the information collected. Evaluation:

- tests usability and functionality of system
- occurs in laboratory, field and/or incollaboration with users
- evaluates both design and implementation
- should be considered at all stages inthe design life cycle

12.4.1 Goals of Evaluation

- assess extent of system functionality
- assess effect of interface on user
- identify specific problems

12.4.2 Principles of Evaluation

Evaluation should be

1. Based on clearly stated objectives
2. Comprehensive
3. Cooperative
4. Used Judiciously
5. Continuous and integral part of the teaching – learning process

12.4.3 Key features for Evaluating Information Technology

1. Begin evaluation efforts with a "theory of change". A clear understanding of staffexpectations of the difference new information technology will make in their work and theirproduction is a fundamental component of evaluation. This theory of how things will be better becomes the baseline against which results are measured.
2. Clarity of purpose is critical to success. What is technology expected to do, why, and forwhom are questions that need to be asked and answered often by a group of key constituents including staff, end users, board, and funders.
3. Define the scope of your efforts. There also needs to be a clear understanding of the limitations of internal capacity building—staff may be able to receive more calls from clients, or more efficiently refer clients to other resources, but this does not automatically mean that clients will be better served or better off.
4. A basic grounding in information technology is a prerequisite. We have found that in order to successfully engage in this conversation it is essential that key players have at least aworking knowledge of the promises and limitations of information technology.
5. Trusted, impartial technical assistance can make all the difference. The presence of a trusted technical assistance (TA) advisor,

such as a circuit rider, is enormously helpful as part of this conversation for smaller nonprofits without the in-house expertise to make educated purchasing decisions. It's important that an advisor not be perceived as having something to sell—nonprofits need access to TA experts whose advice isn't motivated by self-interest.

6. Technology is useless without training. Perhaps the most important key to the success of technology efforts is that nonprofit organizations must have adequate and ongoing training to use the new tools at their disposal.

12.4.5 Types of evaluation

As we developed diff choices of IT & its configuration, then the decision making enters into the evaluation phase for selection. The selection criteria for Evaluation would have diff dimensions to be satisfied simultaneously.

These dimensions are as follows;

1. Technical Evaluation
2. Operational Feasibility
3. Financial Consideration

Technical Evaluation; TE deals with the testing parameters, such as data transfer needs, the response level connectivity of the diff H/W platforms, degree of performance TE confirms the IT approach to the info processing needs of the org It helps to break down the H/W on a time scale It is necessary to select the latest technology in all areas of info processing TE planned by scheduling the activities such as bench marking & brain storming session for selection of vendors specifications

Operational Feasibility; OF evaluation considers the people – related issues & whether the systems & the procedures of the org are complementary & conducive The environment must support proper implementation of a IT The short coming on people side lack of subject knowledge, ability to absorb the technology & use it efficiently & effectively The modern IT needs sophisticated back-up of the data at a requisite point & time.

Financial Consideration ; All the options can be evaluated in terms of the investment All business investments are evaluate in terms of ROI The IT investments are difficult to judge on the

12.5 IT Implementation Plan

Implementation of the technology is a complex task & needs detailed & Careful planning for successful implementation. It is necessary to prepare a plan of implementation; The IT Implementation Plan provides an overview of the processes the system is intended to support. If the system is a database, provide a description of the type of data maintained, sources and uses of that data. Include any identification numbers, titles, abbreviations, version numbers and release numbers to describe the system.

The IT Implementation Plan is now available in electronic form which is really a Web interface to a database of TIP data. Using this the

Project Coordinators can if they wish provide the information on behalf of all the project partners, or they can simply start and ask the individual partners to complete the information about their own results and exploitation plans.

The Implementation Plan describes the assumptions made regarding the development and execution of this document as well as the applicable constraints. Some items to consider when identifying the assumptions and constraints are:

- o Schedule
- o Budget
- o Resource availability and skill sets
- o Software and other technology to be reused or purchased
- o Constraints associated with product interfaces

System Organization

The Implementation Plan provides a description of the system structure and the major system components essential to its implementation. It should describe both hardware and software, as appropriate. Charts, diagrams, and graphics may be included as necessary to provide a clear picture of the system.

12.5.1 Major Task

The IT Implementation Plan provides descriptions of the major system implementation tasks. The tasks described in this section are not site-specific, but generic or overall project tasks that are required to install hardware, software, and databases, prepare data and validate the system

If several implementation approaches are being reviewed, then identify the advantages, disadvantages, risks, issues, estimated time frames, and estimated resource requirements for each option considered. These options could include:

- Incremental implementation or phased approach
- Parallel execution
- One-time conversion and switchover
- Any combinations of the above.

Include the following information for the description of each major task, if appropriate:

- What the task will accomplish
- Resources required to accomplish the task
- Key person(s) responsible for the task
- Criteria for successful completion of the task (e.g., "user acceptance")

Examples of major tasks are the following:

- Provide overall planning and coordination for the implementation
- Provide appropriate training for personnel
- Ensure that all manuals applicable to the implementation effort are available when needed

- Provide all needed technical assistance
- Schedule any special computer processing required for the implementation
- Perform site surveys before implementation
- Ensure that all prerequisites have been fulfilled before the implementation date
- Provide personnel for the implementation team
- Acquire special hardware or software
- Perform data conversion before loading data into the system
- Prepare site facilities for implementation

Consider addressing the changes that may be necessary once tht system has been implemented. These changes may include, but are no limited to, personnel and technology equipment alignment, and contracto support.

12.5.2 Implementation Schedule

The Implementation Plan provides a schedule of activities to accomplished.

Security and Privacy

The Implementation Plan includes an overview of the systen security and requirements that must be followed during implementation If the system contains personal data, describe how Privacy Act concern will be addressed.The Implementation Plan provides an overview an discussion of the security features that must be addressed when it implemented. It should include the determination of system sensitivit and the actions necessary to ensure that the system meets all the criteri appropriate to its Certification level.

Implementation Support

The Implementation Plan describes the support hardware, software facilities, and materials required for the implementation, as well as th documentation, necessary personnel and training requirements outstanding issues and implementation impacts to the curren environment.

Documentation

The subsection of the Project Implementation Plan lists an additional documentation needed to support the deliverable system.

Personnel

Like: Staffing Requirements(**number of personnel, length of tim needed, types of skills, skill levels, expertise**),Training of Implementatio Staff

Outstanding Issues

This subsection of the Project Implementation Plan states an known issues or problems relevant to implementation planning. Thi section answers the question, "Are there any specific issues, restrictions or limitations that must be considered as a part of the deployment?"

Implementation Impact

This subsection of the Project Implementation Plan describes how the system's implementation is expected to impact the network infrastructure, support staff, user community, etc. Include any references to Service Level Agreements which describe the performance requirements, availability, security requirements, expected response times, system backups, expected transaction rates, initial storage requirements with expected growth rate, as well as help desk support requirements.

Performance Monitoring

This subsection of the Project Implementation Plan describes the performance monitoring tool, techniques and how it will be used to help determine if the implementation is successful.

Configuration Management Interface

This subsection of the Project Implementation Plan describes Configuration Management, such as when versions will be distributed. Reference the Configuration Management Plan.

Implementation Requirements by Site

Site Name or Identification

This section of the Implementation Plan identifies the site by name, location and ownership.

Site Requirements(hardware, software, database, data and facilities requirement)

Site Implementation Details:

This part of Implementation Plan addresses the specifics of the implementation for this site. Include a description of the implementation team, schedule, procedures, and database and data updates.The following are examples of information to be included:

- o Control inputs
- o Operating instructions
- o Database data sources and inputs
- o Output reports
- o Restart and recovery procedures

Risks and Contingencies

This subsection of the Implementation Plan identifies the risks and specific actions to be taken in the event the implementation fails or needs to be altered at any point and includes the factors to be used for making the decision.

Implementation Verification and Validation

The Implementation Plan describes the process for ensuring that the implementation was not poorly executed. It describes how any noted discrepancies will be rectified.

Acceptance Criteria

This subsection of the Project Implementation Plan establishes the exit or acceptance criteria for transitioning the system into production. Identify the criteria that will be used to determine the acceptability of the deliverables as well as any required technical processes, methods, tools, and/ or performance benchmarks required for product acceptance.

12.6 Summary

One of the essential parts of creating and running a small business is creating a mission or vision for the business and a set of goals the company aims to achieve. Strategic decision making, or strategic planning, describes the process of creating a company's mission and objectives and deciding upon the courses of action a company should pursue to achieve those goals. Strategic deals with the long-run future of the entire organization and have three characteristic: rare, consequential and directive.

Strategic planning includes swot analysis, cost-benefit analysis and outside advice. Evaluation is the process of analyzing, reflecting upon, and summarizing assessment information, and making judgments and/ or decisions based on the information collected. Implementation of the technology is a complex task & needs detailed & Careful planning for successful implementation. The IT Implementation Plan provides descriptions of the major system implementation tasks.

12.7 Self Assessment Test

1. What is strategic decision? Does it always help in the success of organisation / business?
2. What is strategic management? Write some characteristics of strategic decision.
3. What are the prerequisite of strategic planning?
4. Is implementation plan helps in any project andHow?
5. What is evaluation, its goal and principles? Define the major task of evaluation.
6. Define the term Configuration plan.

12.8 Further Readings

1. Strategic Management, Alex Miller, Irwin McGraw Hill
2. Strategic Management-The Indian Context, R. Srinivasan, PHI
3. Strategic Management : Concepts & Cases, 13/E, PHI Learning Pvt. Ltd, David F R
4. Business Policy And Strategic Management: Concepts And Applications (English) 2nd Edition ,PHI, Gupta Vipin, Gollakota

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Management Information System

Block 2
SECURITY AND ETHICAL CHALLENGES

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परिमापक

अनुवाद की स्थिति में

मूल लेखक	अनुवाद
मूल सम्पादक	भाषा सम्पादक
मूल परिमापक	परिमापक

सहयोगी टीम

संयोजक Dr. Gaurav Sankalp, SoMS, UPRTOU, Allahabad

Block Introduction

Block four comprises of four units. Unit thirteen deals wih Ethical responsibilities of business professionals- business technology. Unit fourteen deals with computer crime, hacking, Cyber theft, unauthorized use at work and cyber terrorism. Unit fifteen deals with software and Intellectual property , privacy and various issues of privacy. Unit sixteen deals with Ergonomics, Health and Social issues and working condition.

UNIT-13 Ethical Responsibilities of Business Professionals

Unit Structure

13.0 Objectives

Ethics in business are nothing but the do's and don'ts by the business users in the business. In other words it could be referred as set of principles a business man ought to follow.

13.1 Introduction

"There should be business ethics" means that the business should be conducted according to certain self-recognized moral standards. Few unethical elements in the present day business are cheating, stealing, lying, bribing, corrupting etc.

A business man should be aware of the ethics in the business and should follow them in order to maintain ecological balance in the society.

13.2 Business Ethics and Social Responsibility

Business Ethics is the principles and standards that determine acceptable conduct in business organizations. The acceptability of behaviour in business is determined by customers, competitors, government regulators, interest groups, and the public, as well as each individual's personal moral principles and values.

The study and examination of moral and social responsibility in relation to business practice and decision making in business is known as "Business Ethics". The term "business" is commonly referred to the commercial activities achieved at making profit. But gradually there is a substantial change in the way in which people viewed the business.

In the past primary objective of a business was profit maximization but the present perspectives on business objective is not maximization. It is profit maximization in long run besides fulfilling the ethics in the business. A business is regarded as social institution forming integral part of social systems.The business is viewed as subsystem to the social system.

This is because any type of social system is influenced by

1. The way the business functions
2. The organization of the business
3. Innovations
4. Transmission and diffusion of information.
5. New ideas etc.

They have either direct or indirect effect on the society.

Many consumers and social advocates believe that businesses should not only make a profit but also consider the social implications of their activities. Earlier we define social responsibility as a business's obligation to maximize its positive impact and minimize its negative impact on society. Although many people use the terms *social responsibility* and *ethics* interchangeably, they do not mean the same thing. Business ethics relates to an *individual's* or a *work group's* decisions that society evaluates as right or wrong, whereas social responsibility is a broader concept that concerns the impact of the *entire business's* activities on society. From an ethical perspective, for example, we may be concerned about a health care organization or practitioner overcharging the provincial government for medical services. From a social responsibility perspective, we might be concerned about the impact that this overcharging will have on the ability of the health care system to provide adequate services for all citizens.

The most basic ethical and social responsibility concerns have been codified as laws and regulations that encourage businesses to conform to society's standards, values, and attitudes. At a minimum, managers are expected to obey these laws and regulations.

Most legal issues arise as choices that society deems unethical, irresponsible, or otherwise unacceptable. However, all actions deemed unethical by society are not necessarily illegal, and both legal and ethical concerns change over time. Business law refers to the laws and regulations that govern the conduct of business. Many problems and conflicts in business can be avoided if owners, managers, and employees know more about business law and the legal system. Business ethics, social responsibility, and laws together act as a compliance system requiring that businesses and employees act responsibly in society.

There are good business reasons for a strong commitment to ethical values:

1. Ethical companies have been shown to be more profitable.
2. Making ethical choices results in lower stress for corporate managers and other employees.
3. Our reputation, good or bad, endures.
4. Ethical behaviour enhances leadership.
5. The alternative to voluntary ethical behaviour is demanding and costly regulation.

It is important to understand that business ethics goes beyond legal issues. Ethical conduct builds trust among individuals and in business relationships, which validates and promotes confidence in business relationships. Establishing trust and confidence is much more difficult in organizations that have established reputations for acting unethically.

13.3 Ethical Responsibilities of Business Professionals

13.3.1 Responsibilities of Business

A firm expresses its responsibility to the society by reacting in either or both of the following two ways.

1. The manner in which it carries out its own business activities
2. The welfare activities it takes upon itself as an additional function

13.3.2 Responsibility to Share Holders

1. To make the shareholders feel secured by protecting their investments
2. To be transparent
3. To allow them to participate in decision making
4. To ensure them good dividends

13.3.3 Responsibility to Employees

1. To offer employees fair wages
2. To establish better working conditions
3. To provide them fair work standards and norms.
4. To provide labour welfare activities

5. To educate the employees by adopting proper training methods.
6. To recognize and appreciate the work of the employees and reward them or to promote them.
7. To install grievance handling cell.
8. To enable them to involve in decision making.

13.3.4 Responsibility to Consumers

To improve the efficiency of the business by

a) Increasing productivity.
b) Improving quality.
c) Suroothening distribution system.

1. To offer the products at reasonable prices.
2. To provide pre-purchase and post purchase service to the consumers.
3. To facilitate research and development to meet the customer requirements.
4. To maximize imperfections in distribution systems
5. To provide sufficient and unnecessary information about the product.

13.3.5 Responsibility to Community

1. To be pollution free and maintain ecological balance.
2. To invest more in research and development so as to improve the standard of living of the society.
3. To develop alternative recourses thereby preventing current resources being used from exhaustion.
4. To improve the efficiency of business operations.
5. To include in social welfare activities
6. To contribute to national effort to build up a better society If a firm fulfils all the above mentioned responsibilities then it is said to be following the business ethics. But in practice such an ideal business doesn't exist.

13.4 Few Environmental Concerns

One important factor a business man must not neglect is his responsibility to environment. The abundant natural resources are getting exhausted after 19th century due to rapid industrialization.

Animal Rights

One area of environmental concern in society today is animal rights. Probably the most controversial business practice in this area is the testing of cosmetics and drugs on animals that may be injured or killed as a result. Animal-rights activists, such as People for the Ethical Treatment of Animals, say such research is morally wrong because it harms living creatures. Consumers who share this sentiment may boycott companies that test products on animals and take their business instead to companies, which do not use animal testing.

The uses of fur for luxury coats and skin for decoration purpose have been controversial for many years.

Land

The worst affected are as their cattle starve and they travel even in creasingdistance for grazing due to industrialization and urbanization

Pollution

Water pollution results from dumping toxic chemicals and raw sewage into rivers and oceans, oil spills, and the burial of industrial waste in the ground where it may filter into underground water supplies. Fertilizers and insecticides used in farming and grounds maintenance also run off into water supplies with each rainfall. Water pollution problems are especially notable in heavily industrialized areas.

Though people are keen in this issue by constructing dams and reservoirs the biproducts and industry waste couldn't find a better discharge channel than this. Hence sure measure must be taken in this context to keep the water free from pollution.

Air pollution is usually the result of smoke and other pollutants emitted by manufacturing facilities, as well as carbon monoxide and hydrocarbons emitted by motor vehicles. In addition to the health risks posed by air pollution, when some chemical compounds emitted by manufacturing facilities react with air and rain, acid rain results.

Acid rain has contributed to the deaths of many valuable forests and lakesin North America as well as in Europe. Air pollution may also contribute to theso-called greenhouse effect, in which carbon dioxide collects in the earth's atmosphere, trapping the sun's heat and preventing the earth's surface from cooling. Chlorofluorocarbons also harm the earth's ozone layer, which filters out the sun's harmful ultraviolet light; this too may be a cause of the greenhouse effect

Deforestation:

The results of deforestation for industrialization and urbanization are vulnerable. It is resulting in destruction of wild life, increase in price of wood, air production etc.

Habitat:

The people who are living in forests and remote areas love their shelter and livelihood in the vent of industrialization.

Health:

The business users must be conscious about the health of the society and behave responsibility for their health.

13.5 Ethical Issues

Ethical issues can be categorized in the context of their relation with conflicts of interest, fairness and honesty, communications, and business associations.

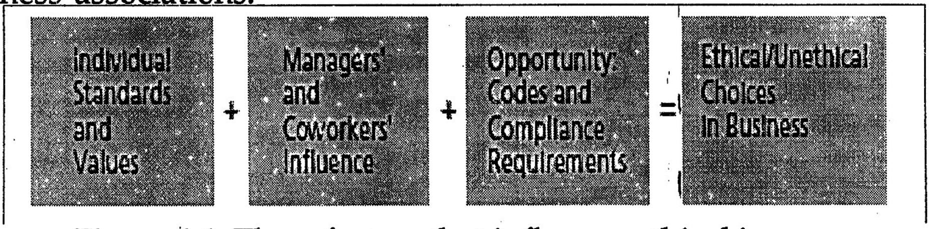

Figure 1.1: Three factors that influence ethical issues

Conflict of Interest: A conflict of interest exists when a person must choose whether to advance his or her own personal interests or those of others.

Example: A manager in a corporation is supposed to ensure that the company is profitable so that its stockholder-owners receive a return on their investment.

Fairness and Honesty: Fairness and honesty are at the heart of business ethics and relate to the general values of decision makers. At a minimum, business persons are expected to follow all applicable laws and regulations. But beyond obeying the law, they are expected not to harm customers, employees, clients, or competitors knowingly through deception, misrepresentation, coercion, or discrimination.

Example: A recent survey showed that nearly one-fourth of workers have been asked to engage in an unethical act at work, and 41 percent carried out the act.One aspect of fairness relates to competition. Although numerous laws have beenpassed to foster competition and make monopolistic practices illegal, companies sometimesgain control over markets by using questionable practices that harm competition.

Another aspect of fairness and honesty relates to disclosure of potential harm caused by product use. When Procter & Gamble introduced Olestra, the low cholesterol fat substitute, products in which it was used had labels warning consumers of potential problems with abdominal cramping.

As mentioned earlier, it is considered improper to give or accept **bribes** payments, gifts, or special favours intended to influence the outcome of a decision. A bribe is a conflict of interest because it benefits an individual at the expense of an organization or society.

Example: Wal-Mart Stores, Inc., may have the toughest policy against conflict of interest in the retail industry. Sam Walton, the late founder of Wal-Mart, prohibited company buyers from accepting so much as a cup of coffee from suppliers. The Wal-Mart policy is black and white and leaves no room for interpretation, and it is probably a factor in helping Wal-

Mart reduce costs. Other retailers typically allow buyers to accept meals, small gifts, and outings such as golf, fishing, or hunting trips.

Communications: Communications is another area in which ethical concerns may arise. False and misleading advertising, as well as deceptive personal-selling tactics, anger consumers and can lead to the failure of a business. Truthfulness about product safety and quality are also important to consumers. In the pharmaceutical industry, for example, dietary supplements, such as herbs, are sold with limited regulation and testing, and many supplements are sold by small, independent marketers.

Some manufacturers fail to provide enough information for consumers about differences between products. In the contact lens solution market, a number of manufacturers are marketing identical products with different prices. Bausch & Lomb, for example, priced its one-ounce bottle of Sensitive Eyes Drops at about $5.65. But a 12-ounce bottle of its Sensitive Eyes Saline Solution, which had the same ingredients and formulation but a different label, was priced at $2.79. "It's not only a sneaky way to make money, but it's lousy marketing, the type of thing that backfires . . .when it's made public."

Another important aspect of communications that may raises on cigarette packages

Business Relationships: The behaviour of businesspersons toward customers, suppliers, and others in their workplace may also generate ethical concerns. Ethical behaviour within a business involves keeping company secrets, meeting obligations and responsibilities, and avoiding undue pressure that may force others to act unethically.

Managers, in particular, because of the authority of their position, have the opportunity to influence employees' actions. For example, a manager can influence employees to use pirated computer software to save costs. The use of illegal software puts the employee and the company at legal risk, but employees may feel pressured to do so by their superior's authority.

It is the responsibility of managers to create a work environment that helps the company achieve its objectives and fulfil its responsibilities. However, the methods that managers use to enforce these responsibilities should not compromise employee rights. Organizational pressures may encourage a person to engage in activities that he or she might otherwise view as unethical, such as invading others' privacy or stealing a competitor's secrets. Or the firm may provide only vague or lax supervision on ethical issues, providing the opportunity for misconduct. Managers who offer no ethical direction to employees create many opportunities for manipulation, dishonesty, and conflicts of interest.

Plagiarism: taking someone else's work and presenting it as your own without mentioning or acknowledging the source is another ethical issue. In business, an ethical issue arises when an employee copies reports or takes the work or ideas of otners and presents them as his or her own. A manager attempting to take credit for a subordinate's ideas is engaging in another type of plagiarism.

So finally we can say the important ethical principles that a business should follows are:

1. Do not deceive or cheat the customers by selling substandard or defective products by under measurement or any other means.

   Example:Textile merchants in general clear the defective stock under the guise of discounts.

2. Do not destroy or distort competition.

3. Treasure sincerity and accuracy in advertising, labelling and packaging.

   Example: Ads of automobiles in general provide false details in every aspect.

4. Do not furnish the image of competitors by unfair practices.

   Example: Publishing false information about competitors, bribing the retailers etc.

5. Make accurate business records so that transparency to the shareholders can be achieved.

6. Pay taxes and discharge other obligation promptly.

7. Do not form castle agreements, even informal, to control production, prices etc to the common detriment.

   Example: Cellular network providers will be in informal castle agreements to control the traffic.

8. Refrain from secret kick-backs or pay logs to customers, suppliers, administrators, politicians etc.

9. Ensure payment of fair wages and fair treatment to the internal customers as well as external customers and share-holders.

10. Do not report to hoarding, black marketing or profiteering.

    Example: Management of theatres sell the tickets for higher prices during the initial days of release of a film starred by a crazy hero and heroine.

Cases Observed

In some cases the managers come across the situation where they have to neglect sure ethics in order to fulfil source. In those cases the managers must be keen about the level of distortion caused to the society by neglecting such ethics.

Example: Kidney transplantation in India has become most popular because of easy availability at low cost. The doctors run into confusion when they come across the situation where a patient's life can be saved by disturbing the health of others.

Example: Deforestation for industrialization around Jamshedpur contributes a lot to the Indian economy by providing opportunities to many unemployed. But this disturbs the ecological balance in the society.

Example: Construction of Subarnarekha dam may result in growth in the economy yet mr. Tete four XLR Trapped the chairperson of Dalmundi iron ores and saved the dwellers

13.6 Recognizing Ethical Issues in Business

An **ethical issue** is an identifiable problem, situation, or opportunity that requires a person to choose from among several actions

that may be evaluated as right or wrong, ethical or unethical. In business, such a choice often involves weighing monetary profit against what a person considers appropriate conduct. The best way to judge the ethics of a decision is to look at a situation from a customer's or competitor's viewpoint:

Should liquid-diet manufacturers make unsubstantiated claims about their products?

Should an engineer agree to divulge her former employer's trade secrets to ensure that she gets a better job with a competitor?

Should a salesperson omit facts about a product's poor safety record in his presentation to a customer?

Such questions require the decision maker to evaluate the ethics of his or her choice.

Not all shortcomings in business ethics are global in scope.

For example, if you are a salesperson, when does offering a gift such as season basketball tickets to a customer become a bribe rather than just as ales practice? Clearly, there are no easy answers to such a question. But the size of the transaction, the history of personal relationships within the particular company, aswell as many other factors may determine whether an action will be judged as right or wrong by others. When Wal-Mart began selling

sandals that strongly resembled the popular Tevabrand, Sports Sandal, took notice. Sales of Teva sandals fell from US$69 million to US$42 million, and company executives believed this was because Wal-Mart was selling copies (or "knock-offs") for 25 percent less. This ethical issue of right or wrong was resolved in court. Teva won the lawsuit, and Wal-Mart agreed to stop selling the shoes.

Ethics are also related to the culture in which a business operates.

In Canada or the United States, for example, it would be inappropriate for a businessperson to bring an elaborately wrapped gift to a prospective client on their first meeting—the gift could be viewed as a bribe. In Japan, however, it is considered impolite *not* to bringa gift.

Experience with the culture in which a business operates is critical to under standingwhat is ethical or unethical.

13.7 How to Implement Business Ethics

- Trade associations can be formed by the business users which should bloster the efforts of running any business with ethics.
- Trade association can promote business ethics in business user by
  - Educating the members of the association and by consistent persuasion.
  - Formulation a code of conduct for their members which should contain code of ethics.
  - Praising and rewarding those firms and business users who keep up the ethics in business & by publishing.
- Another fact which the business user must realize is the management and ownership must be separated because the owners always tend for profit maximization where as the managers case for ethics as they work for fixed salaries.
- A managers must be a professional who possesses systematic knowledge and skill to perform certain responsible functions with authority and who is bound by certain ethics in the use of his knowledge and skill.
- A professional has to have autonomy.
- He/she has enormous responsibilities and shall not use his/her knowledge skill and authority unscrupulously shall not knowingly do distribute to his/her customers.

13.8 Issues involved in Internet Ethics

Internet is a relatively new research tool which provides a unique research environment

- It is difficult to make out which is private and which is public space
- It is easy to screen and collect data without obtaining consent from the author
- The participants and the researcher can easily fake identities

Using Web for Data Collection

Consent Issue:

- When is it necessary to take consent for using information available on the Internet?

- Data are collected from research participants through any form of communication, interaction, or intervention.
- Research participant is unaware of any observation or reporting is taking place
- How to obtain consent?
- By sending e-mails, by pasting notices on list-serve, discussion forum etc., by declaring on the website
- From whom to obtain consent?
- Depending upon the case may be, the consent should be btained from authors of posting on the Internet, Administrators of list serves/discussion forum etc., Webmaster

Anonymity Issue:

- This applies mainly to the case when research is conducted using discussion forum, user groups, list forums etc.
- In case of several sensitive issues, participants are very particular for anonymity
- The anonymity can be maintained by removing the identity elements such as message header, name of the list etc.
- Care should be taken to remove references of place, people and events in demographic data

Accuracy of Information:

- Most of the information available on the Internet is not peer reviewed
- Information published by authentic agencies only should be used
- As there is no face to face contact between the researchers and participants, possibility of miscreants providing incorrect information to mislead the study cannot be ruled out

13.8.1 Ethical issues in disseminating information on the Internet:

- Information about the owner of the site and purpose of the site should be clearly indicated
- Information should be truthful and unbiased
- Information should be accurate, easy to understand and up to date
- Consent from participants must be obtained before publishing any personal data
- Provide meaningful opportunity for users to give feedback to the site
- Copyright notice should be pasted on the site

13.9 Summary

Business Ethics is the principles and standards that determine acceptable conduct in business organizations. The acceptability of behaviour in business is determined by customers, competitors, government regulators, interest groups, and the public, as well as each individual's personal moral principles and values. There are Ethical Responsibilities of Business Professionals which includes Responsibilities to Business, Share Holders, Employees, Consumers and Community. One important factor a business man must not neglect is his responsibility to environment which includes Animal Rights, Land, Pollution, Deforestation, Habitat and Health. Ethical issues can be categorized in the context of their relation with conflicts of interest, fairness and honesty, communications, and business associations. An ethical issue is an identifiable problem, situation, or opportunity that requires a person to choose from among several actions that may be evaluated as right or wrong, ethical or unethical.

13.10 Self Assessment Test

1. What are the ethical decisions that impact any organization?
2. How to contrast the difference between ethical &unethical values within an organization
3. What can companies do to promote a positive ethical & responsible workforce?
4. What ethical responsibilities does an organization have to a different stakeholder?
5. What are the ethical responsibility in accounting
6. What are the ethical decisions that impact any organization?
7. What are ethical responsibilities in an organization?

13.11 Further Reading

1. Business Ethics: An Indian Perspective, 2/e,Pearson Publication, by A.C. Fernando
2. Corporate Governance, Ethics and social responsibility,- Balachandran V, & Chandrashekharan V, 2/e, PHI, 2011.
3. Business Ethics and Corporate Governance - Ghosh B. N, Tata McGraw-Hill, 2012.
4. Business Ethics: An Indian Perspective, Biztantra , Prof (Col) P.S. Bajaj, Dr.Raj Agrawal

UNIT-14 Computer Crime

Unit Structure

14.0 Objective

Throughout the past several decades there have been numerous advances in electronic resources. Technologies such as cellular phones, pagers, home computers, the Internet, websites, and palm pilots have added another dimension to crime. That dimension involves increased methods at criminals' disposal to commit certain crimes along with increased locations in which crimes can occur.

14.1 Introduction

To-days Computer crimes will likely become more frequent with the advent of further technologies. One approach can be found in the Convention on Cybercrime, which distinguishes between four different types of offences.

1. Offences against the confidentiality, integrity and availability of computer data and systems;
2. computer-related offences;
3. content-related offences; and
4. Copyright-related offences.

Generally computer crime can potentially cover an array of offenses. Computer crime is defined as any offense that uses or somehow involves a computer. The Department of Justice has defined computer crime as "Any violation of the criminal law that involves the knowledge of computer technology for its perpetration, investigation, or prosecution."

Some defined computer crime as offenses committed in an "electronic environment" for economic gain or to cause damage or harm to others.

The Business Software Alliance, a public education and awareness organization, may be too restrictive classify computer crime as illegal activities that make use of electronic systems as a means to affect the security of computer systems and computer data.

Today, criminals can commit property crimes from the comfort of their own homes against people who live on the other side of the world through the use of computers.

14.2 Types of Computer Crime

There exists a constantly expanding list of the forms computer crime and computer fraud can take. Many traditional crimes, such as fraud, theft, organized crime rings, prostitution, stalking, and child pornography have been incorporated into the digital world. Offenders may find new opportunities to perpetrate their crimes using this new digital medium. The National White Collar Crime Centre notes, "...computers can be 'used as tools to commit traditional offenses.' This means that the functions specific to computers, such as software programs and Internet capabilities, can be manipulated to conduct criminal activity."Computer crimes can also be grouped into categories in which computers themselves are either the target or victim of an offense, or simply incidental to the act itself. Aside from traditional crimes that have been adapted to utilize electronic resources, there are also a number of offenses that exist specifically due to the accessibility of computer resources.

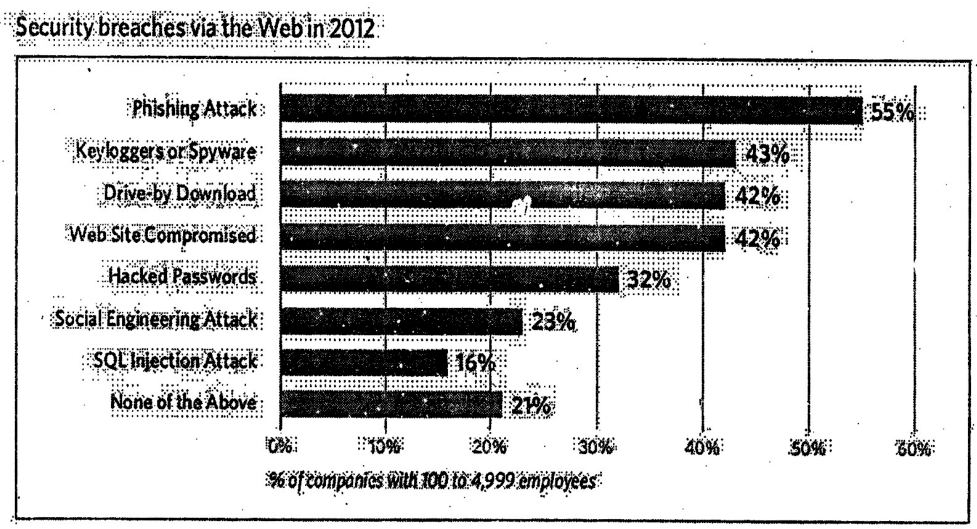

Figure 14.1: Types of cyber-attacks experienced by several benchmarked companies

Some of the traditional crimes now taking place on computers includes fraud, theft, harassment, and child pornography. Computer fraud consists of crimes such as online auction fraud, identity theft, financial and telecommunications fraud, credit card fraud, and various other schemes.

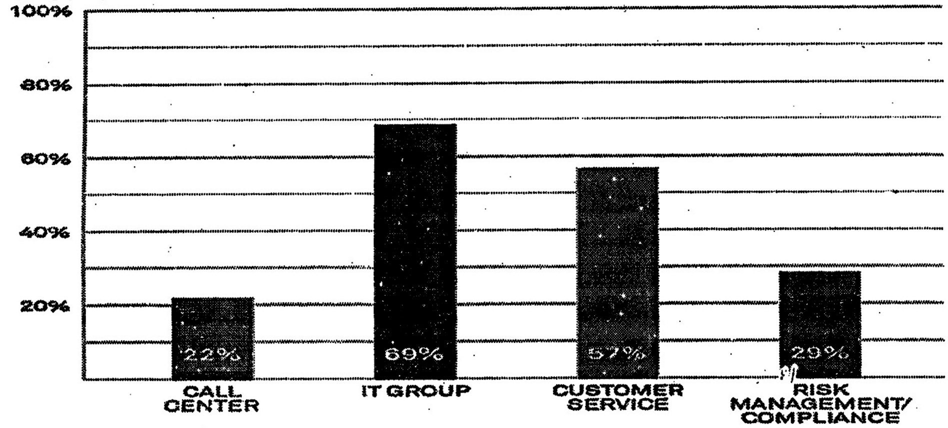

Figure 14.2: Areas of Greatest cost increases in a DDoS Attack

Theft crimes, as related to computer crime, include categories such as monetary, service and data theft, and piracy. Harassment offenses include online harassment and cyber stalking. Child pornography crimes include both the transmission of media that exploits children, as well as solicitation to commit sexual crimes against minors.

14.2.1 Hacking:

The actual word is "Cracking" and not "Hacking". 'Hackers' are very intelligent people who use their skill in a constructive and positive manner. They help the government to protect national documents of strategic importance, help organizations to protect documents and company secrets, and even sometimes help justice to meet its end by extracting out electronic evidence.

Hacking has been defined as "Deliberately gaining unauthorized access to an information system."

- A cracker is generally someone who breaks into someone else's computer system, often on a network, bypasses passwords or licenses in computer programs or in other ways intentionally breaches computer security. A cracker can be doing this for profit, maliciously, for some altruistic purpose or cause, or because the challenge is there. Some breaking-and-entering has been done ostensibly to point out weaknesses in a site's security system.
- But with time, both the word are used interchangeably.

What Hackers Do?

- Criminals Can Operate Anonymously Over the Computer Networks.
- Hackers Invade Privacy

- Hackers Destroy "Property" in the Form of Computer Files or Records
- Hackers Injure Other Computer Users by DestroyingInformation Systems

Types of Hackers

- **Code Hackers** - They know computers inside out. Theycan make the computer do nearly anything they want it to.
- **Crackers** - They break into computer systems. Circumventing Operating Systems and their security is their favorite past time. It involves breaking the security on software applications.
- **Cyber Punks** - They are the masters of cryptography.
- **Phreakers** - They combine their in-depth knowledge of the Internet and the mass telecommunications system.
- **Virus Builders** - Virus incidents have resulted in significant and data loss at some stage or the other. The loss could be on account of: -
    - Viruses - A virus is a programme that may or may not attach itself to a file and replicate itself. It can attack any area: from corrupting the data of the file that it invades, using the computer's processing resources in attempt to crash the machine and more.
    - Worms - Worms may also invade a computer and steal its resources to replicate themselves. They use the network to spread themselves. "Love bug" is a recent.
    - Trojan horse - Trojan horse is dicey. It appears to do one thing but does something else. The system may accept it as one thing. Upon execution, it may release a virus, worm or logic bomb.

14.2.2 Computer Fraud

Computer fraud is one of the most rapidly increasing forms of computer crime. Computer fraud is also commonly referred to as Internet fraud. Essentially, computer/ Internet fraud is "any type of fraud scheme that uses one or more components of the Internet-such as chat rooms, e-mail, message boards, or Web sites to present fraudulent transactions, or to transmit the proceeds of fraud to financial institutions or to others connected with the scheme" There are multiple forms of Internet fraud.

Computer fraud can be described as a subset of computer crime. Computer fraud uses electronic resources to present fraudulent or misrepresented information as a means of deception. The Bureau of Justice Statistics outlines fraud as "The intentional misrepresentation of information or identity to deceive others" and adds the qualifier of "use of electronic means" to delineate computer fraud.

In general, computer fraud should contain the same basic definition of traditional fraud, while employing new qualifiers that adapt its use for electronic resources. The Internet Crime Complaint Centre has identified several other forms of Internet fraud crimes. The additional forms include:

- ***Advance Fee Fraud Schemes***-in, which the victim is required to pay significant fees in advance of receiving a substantial amount of money or merchandise. The fees are usually passed off as taxes, or processing fees, or charges for notarized documents. The victim pays these fees and receives nothing in return. Perhaps the most common example of this type of fraud occurs when a victim is expecting a large payoff for helping to move millions of dollars out of a foreign country. The victim may also believe he has won a large award in a nonexistent foreign lottery.
- ***Business/Employment Schemes***-typically incorporate identity theft, freight forwarding, and counterfeit check schemes. The fraudster posts a help-wanted ad on popular Internet job search sites. Respondents are required to fill out an application wherein they divulge sensitive personal information, such as their date of birth and Social Security number. The fraudster uses that information to purchase merchandise on credit. The merchandise is sent to another respondent who has been hired as a freight forwarder by the fraudster. The merchandise is then reshipped out of the country. The fraudster, who has represented himself as a foreign company, then pays the freight forwarder with a counterfeit check containing a significant overage amount. The overage is wired back to the fraudster, usually in a foreign country, before the fraud is discovered.
- ***Counterfeit Check Schemes-*** a counterfeit or fraudulent cashier's check or corporate check is utilized to pay for merchandise. Often these checks are made out for a substantially larger amount than the purchase price. The victims are instructed to deposit the check and return the overage amount, usually by wire transfer, to a foreign country. Because banks may release funds from a cashier's check before the check actually clears, the victim believes the check has cleared and wires the money as instructed. One popular variation of this scam involves the purchase of automobiles listed for sale in various Internet classified advertisements. The sellers are contacted about purchasing the autos and shipping them to a foreign country. The buyer, or person acting on behalf of a buyer then sends the seller a cashier's check for an amount several thousand dollars over the price of the vehicle. The seller is directed to deposit the check and wire the excess back to the buyer so they can pay the shipping charges. Once the money is sent, the buyer typically comes up with an

excuse for canceling the purchase, and attempts to have the rest of the money returned. Although the seller does not lose the vehicle, he is typically held responsible by his bank for depositing a counterfeit check.

Credit/Debit Card Fraud-is the unauthorized use of a credit/debit card to fraudulently obtain money or property. Credit/debit card numbers can be stolen from unsecured web sites, or can be obtained in an identity theft scheme.

Freight forwarding/Reshipping-the receiving and subsequent reshipping of an on-line ordered merchandise to locations usually abroad. Individuals are often solicited to participate in this activity in chat rooms, or through Internet job postings. Unbeknownst to the reshipped, the merchandise has been paid for with fraudulent credit cards.

- *Identity theft*- occurs when someone appropriates another's personal information without his or her knowledge to commit theft or fraud. Identity theft is a vehicle for perpetrating other types of fraud schemes. Typically, the victim is led to believe they are divulging sensitive personal information to a legitimate business, sometimes as a response to an e-mail solicitation to update billing or membership information, or as an application to a fraudulent Internet job posting.
- *Investment Fraud*- an offering that uses fraudulent claims to solicit investments or loans, or that provides for the purchase, use, or trade of forged or counterfeit securities.
- *Non-delivery of Goods/Services*-merchandise or services that were purchased or contracted by individuals on-line are never delivered.
- *Phony Escrow Services*-in an effort to persuade a wary Internet auction participant, the fraudster will propose the use of a third-party escrow service to facilitate the exchange of money and merchandise. The victim is unaware the fraudster has spoofed a legitimate escrow service. The victim sends payment or merchandise to the phony escrow and receives nothing in return.
- *Ponzi/Pyramid Schemes*-investors are enticed to invest in this fraudulent scheme by the promises of abnormally high profits. However, no investments are actually made by the so called "investment firm". Early investors are paid returns with the investment capital received from subsequent investors. The system eventually collapses and investors do not receive their promised dividends and lose their initial investment.
- *Spoofing/Phishing*- a technique whereby a fraudster pretends to be someone else's email or web site. This is typically done by copying the web content of a legitimate web site to the fraudster's newly created fraudulent web site. Phishing refers to the scheme

whereby the perpetrators use the spoofed web sites in an attempt to dope the victim into divulging sensitive information, such as passwords, credit card and bank account numbers. The victim, usually via email is provided with a hyperlink that directs hi/her to a fraudster's web site. This fraudulent web site's name closely resembles the true name of the legitimate business. The victim arrives at the fraudulent web site and is convinced by the sites content that they are in fact at the company's legitimate web site and are tricked into divulging sensitive personal information. Spoofing and phishing are done to further perpetrate other schemes, including identify theft and auction fraud. The Anti-Phishing Working Group defines Phishing as "a form of online identity theft that uses spoofed emails designed to attract recipients to fraudulent websites which attempt to trick them into exposing personal financial data such as credit card numbers, account usernames and passwords, social security numbers, etc."

14.2.3 *Cyber Theft*

Computer crimes involving theft are very diverse. The gaining of access and removal of property through the use of electronic resources generally defines theft computer crimes. This property may include money, service, programs, data, or computer output, and computer time.

In addition, altering computer input or output without authorization, destroying or misusing proprietary information, and the unauthorized use of computer resources (theft of computer time) can be considered theft-related computer crimes.

Internet piracy is a more prominent form of theft in a digital medium. Like Piracy, it is the act of duplicating copyrighted material without authorization. For the past few years, private and law enforcement organizations have been putting a concentrated effort on stopping this offense.

14.2.4 *Unauthorized use at work*

Unauthorized access of a computer, computer system, or computer network is a prerequisite to many forms of computer crimes and computer fraud. This form of crime amounts to electronic intrusion, or gaining access to resources via a computer resource without permission. Unauthorized access may occur both on individuals' personal computers, as well as in the workplace. One major form of unauthorized access is known as hacking. Hacking is "...the act of gaining unauthorized access to a computer system or network and in some cases making unauthorized use of this access." As stated previously, unauthorized access may be a gateway to commit other offenses.

Another form of computer crime that is prohibited by most states is unauthorized use (1) A person may not intentionally, wilfully, and without authorization access, attempt to access, or cause access to a computer, computer network, computer software, computer control language, computer system, computer services, computer data base, or any part of these services to (i) cause the malfunction or interrupt the operation of a computer, computer network, computer software, computer control language, computer system, computer services, computer data base, or any part of these systems or services; or (ii) alter, damage, or destroy data or a computer program stored, maintained, or produced by a computer, computer network, computer system, computer services, computer data base, or any part of these systems or services. (2) A person may not intentionally, wilifully, and without authorization: (i) identify or attempt to identify any valid access codes; or (ii) distribute or publicize any valid access codes to any unauthorized person.

Some others are:

Denial of Service

A denial of service attack is a targeted effort to disrupt a legitimate user of a service from having access to the service. This may be accomplished through a number of methods. Offenders can limit or prevent access to services by overloading the available resources, changing the configuration of the service's data, or physically destroying the available connections to the information

Computer invasion *of Privacy*

Computer assault of privacy is another form of computer crime proscribed in state legislatures.

A person is guilty of the crime of computer invasion of privacy when he uses a computer or computer network and intentionally examines without authority any employment, salary, credit, or any other financial or personal information relating to any other person. "Examination" under this section requires the offender to review the information relating to any other person after the time at which the offender knows or should know that he is without authority to view the information displayed.

Harmful Content Crimes

Included in this category are child pornography and exploitation crimes, harassment, stalking, and malicious programs and use of computer resources.

Spam

Another form of computer crime is spam mail. Spam mail is the distribution of bulk e-mail that offers recipients deals on products or services. The purpose of spam mail is to make customers think they are going to receive the real product or service at a reduced price. However, before the deal can occur, the sender of the spam asks for money, the recipients' credit card number or other personal information. The customer will send that information and never receive the product nor hear from the spammer.

14.2.5 *Cyber terrorism*

Cyber terrorism is the adaptation of terrorism to computer resources, whose purpose is to cause fear in its victims by attacking electronic resources.

The word "*cyber terrorism*" refers to two elements: **cyberspace** and **terrorism.**

Cyber terrorism is generally understood to mean unlawful attacks and threats of attack against computers, networks, and the information stored therein when done to intimidate a government or its people in furtherance of political or social objectives. Further, to qualify as cyber terrorism, an attack should result in violence against persons or property, or at least cause enough harm to generate fear.

Cyber terrorism is the use of Internet based terror attacks, done deliberately in order to create disturbances in usual working of the internet. Since, many computers are connected through internet, the chances of high disruption in computer related services in personal as well commercial devices. Attacks through cyber terrorism can be in form of various illegal activities whose number is on a constant increase, a few are most lethal and common. These include attacks from viruses, attacks from Trojans, attacks from BOTS, attacks on databases, black hat hacking etc.

Some of the examples of cyber-attacks or ways of cyber terrorism are: hacking into computer systems, introducing viruses to vulnerable networks, web site defacing, *Denial-of-service* attacks, or terroristic threats made via electronic communication.

Why is this situation alarming?

A computer performs three major operations.

1. Stores the data
2. Processes the data
3. Communicates with other computers of various types

Though extremely quick in all the tasks listed above, computers are much a man's machine and do need a good user for proper execution of processes. This means that they can be used to create programs that can create wonders to the technology as well as can shut the whole digital down to its very core. This has been with a help of a few examples given below:

There are two incidents which brought this issue of "**cyber terrorism**" into lime light.

1. It was during end 90's and early millennium, the fear of "Millennium Bug" has increased. The cyber-attacks also increased during the same time. Although the millennium bug was by no means a terrorist attack or plot against the world or the United States, it sparked fears of possibly large scale cyber-attacks.

2. It was after 9/11 attack on the cyber towers in United States of America, the fear of cyber-attacks accelerated. After these attacks, US took some strict measures to curb terrorism and started *"war on terror"*, which led to further media coverage of the potential threats of cyber terrorism in the years following. Mainstream media coverage often discusses the possibility of a large attack making use of computer networks to sabotage critical infrastructures with the aim of putting human lives in jeopardy or causing disruption on a national scale either directly or by disruption of the national economy.

Some of the Major attacks:

1999- NATO Computers were attacked.

2007- Estonian government ministry networks as well as two major Estonian bank networks.

2008- The website of Ukrainian president Viktor Yushchenko was attacked by hackers.

There are many other un-reported attacks on several state run bodies, companies, profit giving organizations, financial institutions, budget & funds allocations, etc. while some of the attacked are accused to be politically motivated, while some attacks are privately done by hackers, and sometimes as revenge or vengeance.

The current state of cyberspace is such that information is seriously at risk. The impact of this risk to the physical health of mankind is, at present, indirect. Computers do not, at present, control sufficient physical processes, without human intervention, to pose a significant risk of terrorism in the classic sense.

14.3 Why Cyber-attack sare Successful?

- The Insider Threat
- Persistence of Computer System Vulnerabilities
- Errors in New Software Products
- Inadequate Resources.

14.4 Warning Signs

- You have a good credit history but are turned down because of a default on your record.
- There are entries on your credit file you do not recognize.
- You are being chased for outstanding debt.
- Mail you normally expect from financial institutions does not arrive.
- You have lost or had important documents stolen.

- You apply for benefits and are told you are already claiming, when you are not.

14.5 Computer Security Tips

- Make sure you have a good anti-virus software which regularly runs scanning programs for spy ware, a personal firewall and a spam filter.
- Never keep passwords stored on your computer, or disclose them to anybody.
- If you are accessing banking details from a computer that is used by other people, ensure you do not click on "save" password, as another user could gain access.
- Check your bank statements and receipts carefully to ensure there are no fraudulent transactions.

14.6 Summary

There exists a constantly expanding list of the forms computer crime and computer fraud can take. Many traditional crimes, such as fraud, theft, organized crime rings, prostitution, stalking, and child pornography have been incorporated into the digital world. Hacking has been defined as "Deliberately gaining unauthorized access to an information system." A cracker is generally someone who breaks into someone else's computer system, often on a network, bypasses passwords or licenses in computer programs or in other ways intentionally breaches computer security.

Computer crimes involving theft are very diverse. Unauthorized access of a computer, computer system, or computer network is a prerequisite to many forms of computer crimes and computer fraud. Cyber terrorism is the adaptation of terrorism to computer resources, whose purpose is to cause fear in its victims by attacking electronic resources. Some of the Major attacks are 1999- NATO Computers, 2007- Estonian government ministry networks etc. we generally got some signs as warning. We must follow the computer security tips to avoid such problems.

14.7 Self Assessment Test

1. What are the top five Computer crime?
2. What are the different ways to Prevent Computer Crimes?
3. Write down any two types of computer crimes that occur over cyber space and how?
4. What is the difference between cyber theft and cyber fraud?
5. "Cyber-crimes performed by violating privacy rules." Explain it.

6. What is the effect of cyber-crimes in the global world?
7. Give any two example of cyber terrorism.
8. What is the role of hackers in computer crime?

14.8 Further Reading

1. Cyber Crime in India - A Comparative Study,Eastern Law House,Dr. M. Dasgupta
2. Computer Law, Oxford University Press, Chris Reed
3. Cyber Crimes and Fraud Management, Macmillan India Ltd, Indian Institute of Banking & Finance
4. Cyber Law & Crimes,Asia Law House, Barkha Bhasin, Rama Mohan Ukkalam

UNIT-15 Software and Intellectual Property

Unit Structure

15.0 Objective

The concept of intellectual property (IP) will be understood better if we understand what is meant by the term property. To a lay mind, property means some material object belonging to a particular person.

15.1 Introduction

The concept of ownership is critical to the concept or property. Ownership means the right to possess, use and dispose of the property and at the desire of the owner, to exclude the others. If a society dces not recognise ownership, it will not have a concept of property. In the legal sense, property refers to the bundle of rights that the law confers on a person by virtue of the ownership and possession of an object.

Two factors significantly influence the value of an object as property. The first factor is *insufficiency,* which refers to its availability in relation to the need. The *insufficiency* is a thing in relation to the demand for it, the higher is its value. The second important factor influencing the value of an object is *the knowledge of its use or uses*. The higher the value of an object, the more keenly it is protected as a *property*.

There are bundle of rights for property. These rights deal with various aspects of the relationship between man and his property, such as: ownership and possession; use and enjoyment of the fruits of the application of property; exclusion of others from use and application of the property; and transfer of rights in the property.

The IPRs are based on three underlying premises:

1. Creative activity culminating in IP can be increased by measures aimed to encourage it; and also, this activity will not be generated in economically adequate quantity for public use without economic incentives.
2. Adequate economic benefits as just reward for the creation of IP can be ensured only through the grant of monopoly rights, even if for a limited period.
3. The provisions of the global IP regime ensure just economic returns to the generators of wealth through IP, and safeguard the interest of other entrepreneurs and the society in general.

Computer technology plays an increasingly important role in our society today. It penetrates more and more areas of our life, not only in business environments but also in daily surroundings. A computer cannot operate without instructions. These instructions, so-called computer programs or software, may be incorporated in the computer or apparatus, but are often created, reproduced and distributed on media such as CD-ROMs or transmitted on-line.

The growth of the Internet has put pressure on traditional intellectual property protections such as copyright and patent. Some forms of information, when made accessible on the Internet, are easily copied. Because the costs of copying are low and because copying is often anonymous, publishers have often responded with more aggressive enforcement of existing intellectual property rights and with calls for extensions of those rights to cover additional content, new media and new forms of access. This effort can actually be seen as part of a twenty-year trend toward tighter intellectual property enforcement and extensions of intellectual property rights.

One problem in determining where software fits in the intellectual-property system is that computer software and hardware technologies are changing rapidly, both qualitatively and quantitatively.

Another problem is compounding the problem of rapid technological change. The legal and technical communities do not have consistent definitions for terms like "algorithm" or "interface" that make up computer and computational parlance. For example, one common technical definition of the term algorithm is: "a set of rules which specify a sequence ofactions to be taken to solve a problem."

15.1.1 Checklist for dealing with IPR in software use and development

The layers of rights which are likely to protect software will each impose restrictions upon the user. It is therefore important that these and their characteristics are recognised to ensure that:

- Use of the software is legal

- Obligations to third parties are honoured
- Rights are protected
- Risks to an institution, its partners and funding bodies are minimised
- Ability to exploit rights in developed software is maintained
- Sustainability strategies can be realistically pursued.

To assist in this task, the check list below provides some useful points of reference:

- Carry out a regular software licensing compliance audit: familiarise yourself with the broad range of rights which are likely to protect the software that you wish to use and/or develop, as well as the legal ramifications and restrictions associated with each
- Maintain software and licence registers; there are several software products available for maintaining such a register.
- Incorporate software development and use within your IP Policy and IT Terms of Use.
- Assign staff to take responsibility for rights clearance and management.
- Allocate appropriate budgets and other resources to rights and licence management.
- Carry out prior art searches necessary for software development.
- Check terms of open source and proprietary licence agreements to ensure that your required use is permitted. This is especially important when creating new software using pre-existing components.
- Contact OSS Watch for further information about Open Source Licences if you are considering permitting of use of developed software under an Open Source licence.
- Negotiate with rights holders for any activities that are beyond the scope of the rights permitted and/or licence agreements which are necessary as part of your project.
- Ensure the incorporation of contractual terms relating to ownership and use of IP generated by contractors and freelancers within agreements.
- Carry out risk assessments relating to the use of patentable software. Other risks that will need to be considered include use of third party designs, trademarks and copyright materials. Bear in mind that making software available on the web may amount to distribution into many jurisdictions, for the purposes of patent litigation.
- Incorporate any identified risks within a risk registry and develop robust policies for minimising these risks.

- Consider the costs and benefits for registering further IP protection (such as patents and trademarks) for software and related goods and services developed in-house.
- Check the terms of any agreements and other contractual obligations such as consortium agreements relating to IPR and the stipulations relating to subsequent access to any software that you might be developing.

15.1.2 Types of Intellectual Property

IP has been generally divided into two main categories viz., (a) Industrial Property, (b) Copyright.

a) *Industrial property* consists of rights relating to inventions, trademarks, industrial designs and appellation of origin.

b) *Copyright* protects rights related to creation of human mind in the fields of literature, music, art and audio-visual works. The owner of copyright has rights not only in the original work, but also in creative work that is derived from the original work, e.g. its translation or adaptation or the enactment or production of a film based on the original work. Such rights relating to a copyright are called *related rights*. There are *neighbouring rights* on copyright, which protect performances of performing artists, phonograms and broadcasts. Related rights and neighbouring rights are terms used interchangeably.

Software is legally protected by (i) a range of Intellectual Property Rights (IPR), and in many cases by (ii) contractual agreements. Provisions in contracts under which the software is acquired, sometimes referred to as licences, are likely to specify authorised uses and conditions for such use.A computer program is automatically protected by copyright as a literary work. It may also be the subject of a granted patent, which in turn may or may not be valid.

Copyright: It is a traditional method. It Protects the precise *expression* of an idea (or algorithm) rather than the idea/algorithm itself. Often combined with trade secrecy (implemented via license of machine code only), limiting use for further development.

Copyright is an exclusive right, which means that unless (i) permission has been granted by the rights holder, or (ii) copyright in the work has expired, or (iii) an exception applies, it is an infringement to commit any of these restricted acts. Due to the special nature of software, a number of specified exceptions and permitted uses are provided.

Copyright places a number of restrictions upon use, which include:

- Permanent and temporary copying, either of the program as whole or a substantial part, either of the source or object code, including writing code in any language which is substantially based on it
- Communicating to the public (e.g., making it available on a website to other than authorised users) of all or a substantial part

- Making an adaptation, arrangement or other altered version, including a translation into another computer language; this includes repurposing of any elements, e.g. combination or incorporation with other software or other copyright works, e.g., to create a multi-media work or database
- Distribution or rental
- De-compilation of a program, unless it is for the purpose of creating an interoperable program
- Possessing or disseminating an infringing copy.

Items associated with the software are also likely to be protected by IPR, notably:

- a manual will be a copyright literary work
- icons and other pictorial elements are likely to be copyright artistic works
- a logo may be a copyright artistic work and/or a protected design and/or a registered or unregistered trade mark
- the name is likely to be protected against passing-off and other restricted uses as a trade-mark.

These rights apply regardless of the form of supply of the software, e.g. on a CD/DVD or by downloading, although the methods by which contracts are formed will differ (e.g. shrink-wrap, click-use). The validity of contractual provisions may depend on both general contract law (including those applicable to consumer contracts) and intellectual property law.

Copyright in Software and its Ownership

Software is automatically protected by copyright, as soon as the code is expressed in a material form such as writing. The first owner of the copyright in software is its author, except that in the case of software created during the course of employment, it is the employer rather than the employee. Hence, software created by students, freelancers and contractors and sub-contractors, will belong to the creator, and not the HEI or FEI. It is important to note that the default positions stated here can be varied by a valid agreement.

Any substantially new version of a computer program is a new copyright work. Thus, in view of the rapid cycles of development and obsolescence in the software world, any software of current interest will be protected by copyright. Criteria for protection include the requirement for the code to display originality, i.e. not to have been copied from or be substantially based on pre-existing code.

It also provided a number of exceptions to the copyright restrictions, which allowed certain uses and interactions with software without the requirement to seek permission, some of which are mandatory (i.e. cannot be overridden by contract). These exceptions are:

- *Right to make a back-up copy*

A lawful user may create a backup copy which is necessary for the purposes of such lawful use; this exception cannot be over-ridden by any contractual agreement. However, a backup may not be considered necessary if the program is supplied in a sufficiently robust medium such as a CD/DVD.

- *Right to observe, study and test the program*

  A lawful user may observe, study and test the functionality of the program, or ideas and principles which underpin it, as long as these activities are performed during the course of loading, displaying, running, or storing the program which the user is entitled to do. Like the previous exception, this cannot be over-ridden by a contractual agreement.

- *De-compilation right*

  This exception permits de-compilation of a program, i.e. conversion of a program expressed in a low-level computer language into a higher level language, or in the course of so doing copying it, provided that this is done in order to create an interoperable program.

This exception cannot be over-ridden by contract. However, it is subject to a number of conditions which must be satisfied to prevent any such activities from being potentially disputed by the rights holder. These are:

- Any de-compilation activities are carried out by a lawful user;
- Such de-compilation is necessary in order to obtain the information necessary to create a program which is interoperable with that or with another program, and the information is used only for that purpose;
- Such necessary information is not readily available to the user in some other way, e.g. has not been supplied separately by the rights-owner;
- De-compilation must be strictly limited to what is necessary to achieve the permitted purpose, e.g. it is confined to those parts of the original program which are necessary to achieve interoperability, and the information is not supplied to anyone who does not need it for the permitted purpose;
- The information is not used to create a program substantially similar in its expression to the program which has been decompiled, or to do any act restricted by copyright.

If granted and valid, the patent owner has a monopoly right to prevent third parties from making, using, selling or importing any articles which fulfil the functions described in the patent claim, during the patient's lifetime(approx 20 yr). After that, or earlier if the necessary renewal fees are not paid, the patent expires and anyone can make, use, sell or import the invention without fear of being sued for patent infringement. In addition, the owner can, and often does, license rights under the patent to third parties for a fee. Where a product requires use of patents owned by different persons, it is common to enter into cross licensing agreements. Patents are geographically limited, so to get protection in multiple countries, multiple patent applications have to be made.

If software is also protected by a patent, and if such patent is valid, it would be an infringement to distribute any software which performs a function covered by the patent claim; even if it is not copied (i.e. the software has been independently produced).

Patents have wider application than copyright because whilst to prove copyright infringement, one must demonstrate that the copyright work was actually copied, to demonstrate patent infringement one simply has to demonstrate that the infringer was making, using, etc. the invention, even if that invention had quite independently been developed by the infringer, without any conscious or unconscious copying. There is therefore an obligation on an innovator to check existing patents before making, using, selling or importing an invention. This is much easier today as there are numerous patent databases, many of them free of charge, available for searching online.

Patenting requires a long and expensive registration process, as well as extensive checks, to check whether it is the subject of an existing patent or an application for a patent, and that it has not been described in publicly available literature prior to the application date for the patent.

There are defences against an infringement action, especially that the patent is invalid and should never have been granted in the first place, because, e.g., the invention was known before the application date or the patent owner did not disclose all he/she knew about the invention at the time the patent was applied for, or the making and using is for small-scale research purposes, or the making or using is with the permission of the patentee, or the invention was stolen from the person accused of infringement.

Registered designs and trademark

Computer icons, trading names and project names, software fonts, software-related peripherals, such as dongles and on screen displays are eligible for registered design protection as well as possible trademark protection.

Trademarks are symbols, shapes, words etc., associated with particular goods and services and which are used in the course of business or trade. Whilst there is some protection for unregistered trade marks (often called trade names), the strongest protection for such marks is obtained by applying for and obtaining a Registered Trade Mark. As with patents, this involves making a formal application and paying fees at various stages. Unlike patents, it is necessary to demonstrate that the trademarks are well known to the public, or a section of the public, before they can be registered. They must be distinctive and not confusingly similar to any other existing trade mark or trade name. Certain types of symbols, e.g., Red Cross, Olympics, and certain names, e.g., Royal, cannot be registered.

One can register trade marks for services, such as search services, as well as goods. Registered Trade Marks have to be kept in use and renewal fees have to be paid for them to continue, but as long as these conditions are fulfilled, a registered trade mark can last forever. The owner can sure any third party who uses the mark "in the course of trade" and without permission. Whilst patents and registered designs are limited by geography, registered trademarks are limited by both geography and by class of goods/services. Thus to get extensive protection, the owner has to make separate applications in many countries, and for many classes of goods and services.

Trade Secrets

Any intellectual work product—a formula, device, pattern, or compilation of data-used for a business purpose can be classified as a **trade secret**, provided it is not based on information in the public domain. Protections for trade secrets vary from state to state. In general, trade secret laws grant a monopoly on the ideas behind a work product, but it can be a very tenuous monopoly. Software that contains novel or unique elements, procedures, or compilations can be included as a trade secret. Trade secret law protects the actual ideas in a work product, not only their manifestation. To make this claim, the creator or owner must take care to bind employees and customers with nondisclosure agreements and to prevent the secret from falling into the public domain.

The limitation of trade secret protection is that, although virtually all software programs of any complexity contain unique elements of some sort, it is difficult to prevent the ideas in the work from falling into the public domain when the software is widely distributed.

Geographical indications

GI is a sign used on goods that have a specific geographical origin and possess qualities or a reputation that is solely due to the place of origin. Such goods enjoy an advantage over competing goods solely because of their geographical origin, which thus becomes a kind of IP and is protected. A GI is different from a trade mark. A trade mark is a sign that distinguishes the product and services of an enterprise from those of another. The owner of a trade mark is entitled to exclude others from using the trade mark. A GI merely tells that a product is produced in a certain place and has certain characteristics which are due to the place of production. All producers who make their products in a place designated by the GI and share the same qualities can use it. Eg: Kolhapuri chappal, Banarsi Saree, Darjelling Tea, Mysore Silk, Assam Tea.

Industrial Design

An *industrial design* is the ornamental or aesthetic aspect of an article; it may consist of three-dimensional features such as shape or surface, or of two-dimensional features such as patterns, lines or colour.

The design serves as a tool for product differentiation and lures customers by enhanced visual appeal. It becomes a kind of IP to be protected. Industrial designs are applied to a wide variety of products of industry or handicraft: watches, jewellery, fashion and other luxury items, industrial and medical implements, house ware, furniture, electrical appliances, vehicles and architectural structures, textile designs, toys etc.

An industrial design is distinguished from trade mark primarily because it is constituted by the appearance of a product, which is not necessarily distinctive. A trade mark is necessarily to be distinctive to serve as a sign for product differentiation. The functions of, and the justification for protecting industrial designs and trademarks are quite different. Designs must relate to the appearance of the object which is not determined by technical or functional necessity. Design enhances the visual appeal and adds to the commercial value of the product; it also facilitates the marketing and commercialisation of the product. For registration, a design needs to be new and original, though the notion of these qualities may vary from country to country. In certain conditions, an industrial design can be protected under copyright law or the law against unfair competition.

15.1.3. Software and licences

Overview of software licences

Most rights-holders permit use of software by means of licence agreement. Licences can take several forms, ranging from those that permit the user to view, alter and redistribute the source code (Open Source Licences) to those which are much more restrictive (Proprietary Licences).

Open Source Licences

For **OSS Watch, the JISC funded service** promoting an awareness and understanding of the legal, social, technical and economic issues that arise when educational institutions engage with free and open source software, open source software is **defined as** software released under an Open Source Initiative (OSI) certified licence.

Each of the licences approved by the OSI meets the conditions of the *Open Source Definition*. That definition includes 10 criteria. The most important of these are the free redistribution of the software, access to the source code, and the permission to allow modifications to the software to be made and distributed. Each licence needs to be read carefully to ensure that its terms can be satisfied and that it fulfils all requirements.

Microsoft licensed software is a good example of software which is distributed without the source code being made available. Generally, permission will be granted to the user via their "click-wrap" consent to terms and conditions, without which access is denied. This usually takes the form of a dialogue box containing the terms and conditions and a choice of 'Accept' or 'Reject' interface buttons. Other forms of agreement may include a licence on the back of box, terms and conditions on CD and/or DVD or in rare cases, consent to a written agreement. These licences may be supported by technological protection measures, the circumvention of which may itself constitute an infringement of copyright in addition to any infringement that eventually results from the circumvention.

Freeware, as opposed to Open Source material does not as standard permit the user to access or alter the source code. The word "freeware" initially applied mainly to hobbyist-written software, but more recently has come to mean any software available for no cost.

Examples of freeware in this latter usage include Adobe Reader, the Opera web browser and the Skype voice-over-IP client.

15.2 Privacy

Privacy is a vaguely defined term that, in an online context, includes the right of an individual to:

- Determine what information is collected about them and how it is used. Sometimes we are not aware what data are being collected about us (e.g. via 'cookies' on a Web site) or how it may be used. Registering with a Web site (i.e. giving your name, e-mail address, medical registration number, etc. Such information could be passed on to third parties. Some sites publish 'privacy policies' in an attempt to inform users and reduce the chances of patients or healthcare professionals placing their privacy at risk.
- Access information held about them and know that it is accurate and safe.
- Anonymity (e.g. not having your Web-browsing habits tracked).
- Send and receive e-mail messages or other data (e.g. credit card numbers) that will not be intercepted or read by persons other than the intended recipient(s). Encryption is one way of ensuring this.

15.2.1 Internet Privacy

Internet privacy involves the right or permission of personal privacy concerning the storing provision to third-parties, and displaying of information pertaining to oneself via the Internet. Privacy can entail either *Personally Identifying Information* (PII) or non-PII information such as a site visitor's behaviour on a website. PII refers to any information that can be used to identify an individual. For example, age and physical address alone could identify who an individual is without explicitly disclosing their name, as these two factors are unique enough to typically identify a specific person.

Internet privacy forms a subset of computer privacy. A number of experts within the field of Internet security and privacy believe that privacy doesn't exist; "Privacy is dead – get over it" according to Steve Ram bam, private investigator specializing in Internet privacy cases. In fact, it has been suggested that the "appeal of online services is to broadcast personal information on purpose."

15.2.2 Sources of privacy violation

Web users' privacy can be violated in different ways and with different intentions. The four major sources we identified are unauthorized information transfer, weak security, data magnets, and indirect forms of information collection.

- *Unauthorized information transfer*

  Personal information is increasingly viewed as an important financial asset. Businesses frequently sell individuals' private information to other businesses and organizations. Often, information is transferred without an individual's explicit consent.

- *Weak security*

  The Web's inherently open nature has led to situations in which individuals and organizations exploit the vulnerability of Web-based services and applications to access classified or private information. In general, unauthorized access is the result of weak security. A common form of these accesses occurs when foreign entities penetrate (for example, through hacking) Web users' computers. Consequences generally include exposure of sensitive and private information to unauthorized viewers. The consequences are even more important when the attack's target is a system containing sensitive information about groups of people.

- *Data magnets*

  Data magnets are techniques and tools that any party can use to collect personal data. Users might or/might not be aware that their information is being collected or do not know how that information is collected. Various data magnet techniques exist:

- *Explicitly collecting information through online registration.*
- *Identifying users through IP addresses.*
- *Software downloads.*
- *Cookies.* A cookie is a piece of information that a server and a client pass back and forth.
- *Trojan horses.*
- *Web beacons.* A Web beacon—also known as a Web bug, pixel tag, or clear gif—is a small transparent graphic image that is used in conjunction with cookies to monitor users' actions.

- *Screen scraping.* Screen scraping is a process that uses programs to capture valuable information from Web pages.
- *Federated identity.* A Web user's federated identity is a form of identity (for example, a user name and password pair) that lets a user access several Web resources.

15.2.3 Internet Privacy issues

There are lots of issues by which privacy became more important.

- Malware is a term short for "malicious software" and is used to describe software to cause damage to a single computer, server, or computer network whether that is through the use of a virus, trojan horse, spyware, etc.
- Spyware is a piece of software that obtains information from a user's computer without that user's consent.
- A web bug is an object embedded into a web page or email and is usually invisible to the user of the website or reader of the email. It allows checking to see if a person has looked at a particular website or read a specific email message.
- Phishing is a criminally fraudulent process of trying to obtain sensitive information such as user names, passwords, credit card or bank information. Phishing is an internet crime in which someone masquerades as a trustworthy entity in some form of electronic communication.
- Pharming is a hacker's attempt to redirect traffic from a legitimate website to a completely different internet address. Pharming can be conducted by changing the hosts file on a victim's computer or by exploiting a vulnerability on the DNS server.
- Malicious proxy server (or other "anonymity" services)
- ***<u>Social Networking:</u>*** These social networks keep track of all interactions used on their sites and save them for later use. Issues include cyber stalking, location disclosure, social profiling, 3rd party personal information disclosure, and government information collection without the need for a search warrant. The biggest danger to Internet privacy rights over social networks is not from petty thieves and pornographers, it is from advertisers. The same advertisers that provide revenue to the network
- *<u>Cookies:</u>* An Internet cookie is a great way for websites to recognize visitors who repeatedly view the website, by sending some information to the web browser of the visitor.
- *Hacking*

15.2.4 Internet Privacy Challenges

The top five challenges are:

Protecting Privacy: The Internet's great trade-off is that while you get access to the rest of the world, the rest of the world gets access to you. The data collected can add value to the online experience through customized content and advertising – but such an extensive record of personal information can pose risks to consumers. The industry must take steps to expose the privacy debate by establishing global standards, providing transparent policies, and educating consumers on its practices.

Modernizing Copyright Laws: Is it ok to copy an album and give it to a friend? How many paragraphs should one quote from an online news article? Will we ever be able to pass along an e-book to a colleague? As the Web enters its third decade, the answers to these questions remain unclear. The Internet's power as a medium through which creators can distribute their work continues to grow, yet the current copyright laws are hopelessly out of date. For the Internet to fulfill its potential, new and modernized copyright laws must reflect the current relationship between technology and creativity.

Ensuring Net Neutrality: Ensuring that all Internet traffic is treated equally – meaning that data from Amazon.com and data from a teenager's blog move along the pipeline at the same speed – is a worthy and complicated goal. Industry leaders and policymakers need to come together and identify solutions that will guarantee fair treatment of all Internet traffic. However, these solutions must also provide ISPs with enough flexibility to efficiently manage their networks and services.

Maintaining the Open Web: From commenting on articles and sharing videos to crowd-sourcing and user-generated content, the Internet's interactivity and communal power is what makes it such a vibrant and useful medium. While social networks and mobile apps offer rich, interactive and customized experiences, many of their features are often sheltered from the rest of the Web. If the Internet as a whole is greater than the sum of its parts, we must do a better job of maintaining interconnectivity.

Strengthening Internet Security: Until recently, there has been little examination of the consequences of storing large amounts of proprietary information online. The recent spate of high-level incidents – from Wiki Leaks to China's hacking of the Internet – has made the peril of weak online security a tangible issue. Everyone, from governments and businesses to universities and individuals, must re-evaluate how they share, store, and publish sensitive information on the Internet – take steps to ensure it is protected.

15.2.5 Tips for protecting privacy

Use strong password

Try to use creative, strong passwords for all accounts one uses, so that they cannot be guessed. Use different passwords for each account so that if one is compromised the rest remain safe. Always include a variety of upper and lower case letters, numbers, and special symbols in passwords. Never use a name (your own, someone else's, the name of a place), address, phone number, social security number, birth date, a single word, or a common phrase as a password. Consider using a password manager application to help choose, keep track of, and use your password.

- **Install software updates**

  Install software updates for your computer, Smartphone, or other Internet connected devices promptly, so that the latest security fixes are in place to prevent known bugs from being used to allow unauthorized access to your private information.

- **Close unnecessary accounts**

  Unused accounts are a liability: hackers might use them to infiltrate one's other accounts. Try and get rid of them if possible.

- **Shorten one's Internet friends list**

  Many internet users disclose a lot of important information about themselves online. It is important to regulate who can see this. It is smart only to be "friends" with people one personally knows and trusts, and delete the rest.

- **Delete documents, erase disks and memory, and shred paper documents**

  If you share a computer or access the Internet from a public location such as a library, school, or cyber-cafe, be sure to log out of all applications, delete any documents that you downloaded that you wish to keep private, exit from the web browser, and, if possible, log out before you depart.

  Erase or reformat computer disks and memory before you discard or sell a used computer, smart phone, or other Internet connected device.

  Hard copies of documents, like bank statements or doctors' bills, can contain important information such as social security numbers, and such documents are not always secured. Any paper document citing important information should be shredded before it is discarded.

15.4 Summary

Two factors significantly influence the value of an object as property: insufficiency and knowledge of its use. There is developed a Checklist for dealing with IPR in software use and development. IP has been generally divided into two main categories viz., (a) Industrial Property, (b) Copyright. Privacy is a vaguely defined term that, in an online context, includes the right of an individual. Internet privacy involves the right or permission of personal privacy concerning the storing provision to third-parties, and displaying of information pertaining to oneself via the Internet. The Sources of privacy violation are unauthorized information transfer, Weak security, and Data magnets. There are lots of issues by which privacy becomes more important. Top five Internet Privacy Challenges are Protecting Privacy, Modernizing Copyright Laws, Ensuring Net Neutrality, Maintaining the Open Web and Strengthening Internet Security. There are tips for protecting privacy: Use strong password, Install software updates, Close unnecessary accounts, Shorten one's Internet friends list, Delete documents, erase disks and memory, and shred paper documents.

15.5 Self Assessment Test

1. Explain intellectual-property law and its motivations and exceptions.
2. Explain how intellectual property rights are challenged by information technology.
3. What are the social motivations for copyright law?
4. What are the sources of privacy violation? How can we protect privacy?
5. Define the different types of Intellectual property law.
6. What are meant by privacy and fair information practices?
7. How is the Internet challenging the protection of individual privacy?
8. Write down the issues of privacy.

15.6 Further Readings

1. Practical Approach to Intellectual Property Rights, **I K International Publishing House Pvt. Ltd**, Rachna Singh Puri, Arvind Viswanathan
2. **Law Related to Intellectual Property Right,**Lexis Nexis, Dr. V.K. Ahuja
3. TRIPs & Intellectual Property Rights In India,Pavan Duggal
4. Law Relating to Intellectual Property 5th Edition, Universal Law Pub Co.P.Ltd.-Delhi, Wadehra B L

UNIT-16 Ergonomics

Unit Structure

16.0 Objective

Ergonomics is the study of the relationship between the people and equipment they use and the physical environment in which they work. Ergonomics is a science concerned with the 'fit' between people and their work. It puts people first, taking account of their capabilities and limitations.

16.1 Introduction

Ergonomics aims to make sure that tasks, equipment, information and the environment fit with each worker.

To assess the fit between a person and their work, there is some range of factors, including

- The demands on the worker (activities, workload, work pacing, shift work and fatigue).
- The equipment used (its design in terms of size, shape, controls, displays, and how appropriate it is for the task).
- The information used (how it is presented, accessed, and changed).
- The physical environment (temperature, humidity, lighting, noise, vibration).

16.2 Health and social Issues

16.2.1 Individual's physical and psychological characteristics:

- Body size and shape.

- Fitness and strength.
- Posture.
- The senses, especially vision, hearing and touch.
- Mental abilities.
- Personality.
- Knowledge.
- Training.
- Experience.

16.2.2 Organisation and social environment

- Teamwork and team structure.
- Supervision and leadership
- Supportive management.
- Communications.
- Resources.

A person will find a range of physical and psychological abilities in his own workforce which he may need to take into account in designing the plant and equipment they use, and the tasks he perform.

By assessing people's abilities and limitations, their jobs, equipment and working environment and the interaction between them, it is possible to design safe, effective and productive work systems.

16.2.3 Effect of ergonomics human factors on health and safety

Applying ergonomics to the workplace can:

- reduce the potential for accidents;
- reduce the potential for injury and ill health;
- Improve performance and productivity.

Taking account of ergonomics and human factors can reduce the likelihood of an accident. For example– if a worker is given too much information they may become confused, make mistakes, or panic. In hazardous industries, incorrect decisions or mistaken actions have had catastrophic results.

Ergonomics can also reduce the potential for ill health at work, such as aches, pains and damage to the wrists, shoulders and back, noise-induced hearing loss and work-related asthma.

If person don't follow ergonomics principles, there may be serious consequences for people and whole organisations. Many well-known accidents might have been prevented if ergonomics and human factors had been considered in designing people's jobs and the systems they worked in.

16.2.3 Ergonomics problems?

Consultation involves employers not only giving information to employees but also listening to them and taking account of what they say before making health and safety decisions. Employees have important knowledge of the work they do, problems they have, and their impact on health, safety, and performance. While talking to them, you could also ask them some specific questions about their work such as:

- are there working postures comfortable (or not)?
- do they experience discomfort, aches, pain, fatigue, or feel unable to keep up with the flow of work?
- is the equipment appropriate, easy to use and well maintained?
- is the person satisfied with their working arrangements?
- do they make the same errors and mistakes repeatedly?
- are they following procedures, and if not, why not?

Hazard spotting

While you walk around your workplace, look for signs of poor or inadequate equipment design such as: improvised tools; handwritten reminders, or handwritten labels on machinery controls; plasters on workers' fingers or 'home-made' protective pads made of tissue or foam.

Review

Review information you may already have about accidents and ill health which may result from human factors problems:

- Look at the circumstances that lead to frequent errors or incidents. Try to identify the root causes of people's mistakes. Use accident reports to identify details of incidents and their possible causes.
- Record and look at sickness absence and staff turnover levels. High numbers may be because of the problems listed earlier and/or dissatisfaction at work.

Talking to employees

Workplaces where employees are involved in taking decisions about health and safety are safer and healthier. Collaboration with your employees helps you to manage health and safety in a practical way by:

- helping you spot workplace risks;
- making sure health and safety controls are

16.3 Work Environment

The physical aspects of a workplace environment can have a direct impact on the productivity, health and safety, comfort, concentration, job satisfaction and morale of the people within it. Important factors in the work environment that should be considered include building design and age, workplace layout, workstation set-up, furniture and equipment design and quality, space, temperature, ventilation, lighting, noise, vibration, radiation, air quality.

16.3.1 Importance of workplace environment

When people are working in situations that suit their physical and mental abilities, the correct fit between the person and the work task is accomplished. People are then in the optimum situation for learning, working and achieving, without adverse health consequences, e.g. injury, illness.

Applying ergonomic principles to the design, modification and maintenance of workplace environments, has a benefit on people's work performance and short- and long-term health and safety.

16.3.2 Typical Ergonomics Problem

Ergonomics is typically known for solving physical problems. For example, ensuring that emergency stop buttons are positioned so that people can reach them readily when they need to. But ergonomics also deals with psychological and social aspects of the person and their work. For example, a workload that is too high or too low, unclear tasks, time pressures, inadequate training, and poor support from managers can all have negative effects on people and the work they do. The following examples highlight some 'typical' ergonomic problems found in the workplace:

Design of tasks

- Work demands are too high or too low.
- The employee has little say in how they organise their work.
- Badly designed machinery guards (awkward to use or requiring additional effort) slow down the work.
- Conflicting demands, e.g. high productivity and quality.
- These problems can lead to employees failing to follow procedures or removing guards, causing accidents, injury and ill health.
- The load is too heavy and/or bulky, placing unreasonable demands on the person.
- The load has to be lifted from the floor and/or above the shoulders.
- The job involves frequent repetitive lifting.
- The job requires awkward postures, such as bending or twisting.
- The load can't be gripped properly.
- The job is performed on uneven, wet, or sloping floor surfaces.
- The job is performed under time pressures and doesn't include enough rest breaks.

These problems may lead to physical injuries, such as low back pain or injury to the arms, hands, or fingers. They may also contribute to the risk of slips, trips, and falls.

Workstation layout

- Items that are used frequently are out of convenient reach.
- Inadequate space under work surface for legs.
- Work surface height inappropriate for the tasks causing awkward and uncomfortable postures.

- Lighting inadequate causing eyestrain when inspecting detail on work items.
- Chair not properly adjusted to fit the person and workstation.

Managing the working day

- Not enough recovery time between shifts.
- Juggling shifts with domestic responsibilities.
- Employees working excessive overtime. These problems may lead to tiredness or exhaustion, which can increase the likelihood of accidents and ill health.

16.3.3 Work environment factors

When assessing the workplace environment, consideration should be given to individual **human characteristics** such as age, sex, experience, physical stature etc., and how well these human characteristics match the physical environment. Appropriate **design** of workplace environments will ensure that they accommodate a broad variety of human characteristics.

The work environment should satisfy the physical and mental requirements of the people who work within it. The necessary adjustments to the work area, in terms of the heights and angles of furniture and equipment, should be made for the comfort and safety of **each** person.

The four main categories of physical characteristic that need to be considered in the work environment are:

- **clearance**, e.g. headroom, legroom, elbow-room, access;
- **arm reach**, which has a bearing on storage of materials;
- **posture**, which has a bearing on the location of materials/ equipment, heights of working surfaces;
- **Strength**.

  Physical environmental factors can have an adverse impact on people. The specific physical factors that limit performance will vary depending on both the work environment and individual differences. Those people who are working within an environment are the ones **best able** to identify factors that affect their work. It is important to involve these 'hands-on' people in consultations with supervisors, managers and occupational health and safety personnel when considering options for controlling the risks in question.

  The following environmental hazards may require consideration in your workplace:

- **Noise.** Excessive exposure to loud noise can irreversibly damage the ear, resulting in noise-induced hearing loss. 'Nuisance' noise can be annoying and distracting and result in reduced job performance and satisfaction. Noise may also be unsafe if it impairs communication in the work environment, such as by overpowering auditory alarms.

- **Lighting.** Lighting levels need to be appropriate to the task . Working in dim or overbright work environments can result in eyestrain, headaches, irritability and, inevitably, reduced productivity. Light sources, including the sun, can create unwanted reflections, glare and shadows in the workplace that can cause discomfort and distraction, and can interfere with the performance of visual tasks. Low levels of lighting can cause depression, which for some people may be severe.
- **Ventilation, air quality and thermal comfort.** Ventilation is important for the control of dust, fumes, gases, aerosols, climate and thermal comfort factors. Exposure to different types of dust can result in fibrosis of the lung, allergic reactions and asthma attacks. Various vapours, gases and aerosols have the ability to cause respiratory and skin damage. Extremes of heat can reduce concentration and motivation and cause a number of heat-related illnesses. Extremes of heat can also reduce tolerance to chemical and noise exposure, and increase the risk of heart attacks.
- **Vibration.** Whole body vibration, e.g. from riding a mower, can affect comfort and performance even at low levels and can cause damage to the spine, stomach pain and gastrointestinal complaints. Hand-arm vibration, such as from hand tools, can have negative effects on muscles and the skeleton, and can contribute to carpal tunnel syndrome, low-back pain and vibration white finger, for example.
- **Radiation.** Exposure to ultraviolet radiation from the sun can induce potentially lethal skin cancers. Exposure to direct sun, particularly between the hours of eleven and two, can result in sunburn, headaches and fatigue. Different people have varying degrees of sensitivity to the sun, e.g. fair freckled skin often burns more quickly than olive skin. Precautions for avoiding sun exposure should be followed diligently by **everybody**.

The work area should be set up according to ergonomic design principles. For each task, the following should be considered: frequency and flow of work; materials and equipment required; and the priority of different tasks. Basic guidelines to follow in the design of the work area to enable the efficient management of tasks include:

- **importance** – placing the most important items in the most advantageous or accessible locations;
- **frequency of use** – placing the most frequently used items within the easiest reach;
- **function** – materials and equipment with closely related functions should be grouped together;

- **sequence of use** — materials and equipment that are commonly used in sequence should be grouped together;
- **Work/rest schedules** — work tasks should be varied to change body position and mental activities.
- **optimal positioning** — positioning materials and equipment to reduce physical hazards and increase useability, e.g. placing a document holder in front of a person, if it is viewed more frequently than the monitor, eliminating glare on computer screens by positioning monitors parallel to light fittings and at right angles to windows.

16.3.4 Responsibility for assessing the work environment

Each employee should be conscious of their health in their work environment and record any pain, discomfort, injury or illness that they believe is work-related. This information should be reported to supervisors as soon as possible to allow appropriate corrective action to reduce the risk to health and safety to be taken.

A determination then needs to be made whether the employee and/or supervisor can assess the situation with the available information, or whether information and advice needs to be sought from the district office.

16.3.5 Evaluation of the workplace environment

The risk management process is used to evaluate the workplace environment. This involves:

- **identifying** work environment hazards;
- **assessing the risk** of injury/illness from these hazards;
- **implementing** appropriate **control measures** to prevent or minimise the risks;
- **Checking** that the control strategies are effectively controlling the risks.

To **identify** environmental hazards in your workplace, you can:

- consult with colleagues and supervisors about possible hazards;
- walk through the work site and record any hazards;
- analyse workplace incident, accident, injury and illness data;
- Consult with specialist practitioners, industry associations, unions and government bodies.

In **assessing** the risks associated with the work environment, the following two factors should be considered:

- The **likelihood** of an incident, accident, injury or illness occurring because of the risk — a very high likelihood indicates controls may be necessary;
- The **severity** of the consequences if an incident, accident, injury or illness occurred because of the risk — if there were many fatalities, this would constitute extremely severe consequences.

If a hazard is determined to be a **risk** (based on likelihood of occurrence and severity of consequences), it is advisable to provide time, money and personnel resources to help prevent or minimise the risks.

The risk associated with each hazard can be **controlledby implementing** the following hierarchy of controls:

- **eliminating** the risk from the workplace, e.g. by removing hazardous playground equipment;
- **substituting** a material in the workplace environment with a less hazardous one, e.g. purchasing non-hazardous cleaning equipment, or replacing slippery floors with non-slip flooring;
- **redesigning** the workplace layout to reduce risks, e.g. rearranging furniture to allow easy access to materials and equipment;
- **isolating**, closing off or guarding a particular hazard in the work environment, e.g. keeping medicines in a locked cabinet;
- **administration** — adjusting the time and conditions of an individual's exposure to the risk, e.g. rotating tasks so that employees do not spend too long in hot or cold conditions, or too long performing a strenuous manual task.
- Providing **personal protective equipment** as a last resort, when higher-order controls are not practicable, e.g. providing hearing protection, face shields and sunscreen for janitors/ groundspersons using whipper-snipers and lawn mowers.

16.4 Summary

There are some health and social issues for it. Consultation involves employers not only giving information to employees but also listening to them and taking account of what they say before making health and safety decisions. The physical aspects of a workplace environment can have a direct impact on the productivity, health and safety, comfort, concentration, job satisfaction and morale of the people within it. When people are working in situations that suit their physical and mental abilities, the correct fit between the person and the work task is accomplished.

Ergonomics is typically known for solving physical problems. When assessing the workplace environment, consideration should be given to individual human characteristics such as age, sex, experience, physical stature etc., and how well these human characteristics match the physical environment. The four main categories of physical characteristic that need to be considered in the work environment are: clearance, arm reach, posture and Strength. The following environmental hazards may require consideration in your workplace: Noise, Lighting, Ventilation, air quality, Vibration and Radiation. Each employee should be conscious of their health in their work environment and record any pain, discomfort, injury or illness that they believe is work-related. The risk management process is used to evaluate the workplace environment.

16.5 Self Assessment Test

1. What work environment factors should be assessed?
2. What action should you do if you identified an ergonomics problem?
3. What is Ergonomics? Why is ergonomics important?
4. What is the responsibility for assessing the work environment?
5. How can ergonomics help my workplace?
6. What can you do to detect and prevent ergonomic hazards at your workplace?
7. How do you control ergonomic risk factors?
8. What types of work are most likely to pose ergonomic hazards?

16.6 Further Readings

1. Work Study & Ergonomics, S K Kataria and Sons, S. K. Sharma ,Savita Sharma
2. Ergonomics for Beginners: A Quick Reference Guide, Third Edition, CRC Press, Jan Dul, B Weerdmeester
3. Office Ergonomics: Practical Applications,CRC Press, Céline McKeown

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M.Com.-206
Management Information System

Block 3

Managing International Information System

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परिमापक

अनुवाद की स्थिति में

मूल लेखक	अनुवाद
मूल सम्पादक	भाषा सम्पादक
मूल परिमापक	परिमापक

सहयोगी टीम

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Block Introduction

Block five deals with four units . Unit seventeen deals with global environment, business drivers and challenges developing an international information system. Unit eighteen deals with organizing international information system. Unit nineteen technology issues and global value chains, managing global software. Unit twenty deals with off shore outsourcing opportunities and challenges.

Unit - 17 The Global Environment

Unit Structure

17.0 Objective

Information, communication, and transportation technologies have created a global village in which communication (by telephone, television, radio, or computer network) around the globe is no more difficult and not much more expensive than communication down the block. The cost of moving goods and services to and from geographically dispersed locations has fallen dramatically

17.1 Introduction

Information, communication, and transportation technologies have created a *global village* in whichcommunication (by telephone, television, radio, or computer network) around the globe is no more difficult and not much more expensive than communication down the block. The cost of moving goods and services to and from geographically dispersed locations has fallen dramatically.

Six Tracking global trends, looks at six broad, long-term developments that are shaping our world:

- Emerging markets increase their global power
- Cleantech becomes a competitive advantage
- Global banking seeks recovery through transformation
- Governments enhance ties with the private sector

- Rapid technology innovation creates a smart, mobile world
- Demographic shifts transform the global workforce

Global economies are so tightly interconnected that companies, governments and industries will soon be forced to cooperate in ways we could not have imagined just a few years ago.

In fact, Ernst & Young believes the six trends are themselves connected by three underlying drivers that have helped establish each trend and perpetuate it.

1. **Demographic shifts.** Population growth, increased urbanization, a widening divide between countries with youthful and quickly aging populations and a rapidly growing middle class are reshaping not only the business world, but also society as a whole.
2. **Reshaped global power structure.** As the world recovers from the worst recession in decades, the rise of relationships between the public and private sectors has shifted the balance of global power faster than most could have imagined just a few years ago.
3. **Disruptive innovation.** Innovations in technology continue to have massive effects on business and society. We're now seeing emerging markets become hotbeds of innovation, especially in efforts to reach the growing middle class and low-income consumers around the globe.

The growth of powerful communications technologies and the emergence of world cultures create the condition for *global markets*—global consumers interested in consuming similar products that are culturally approved.

The new global markets and pressure toward global production and operation have called forth whole new capabilities for global coordination of all factors of production. Not only production but also accounting, marketing and sales, human resources, and systems development (all the major business functions) can be coordinated on a global scale.

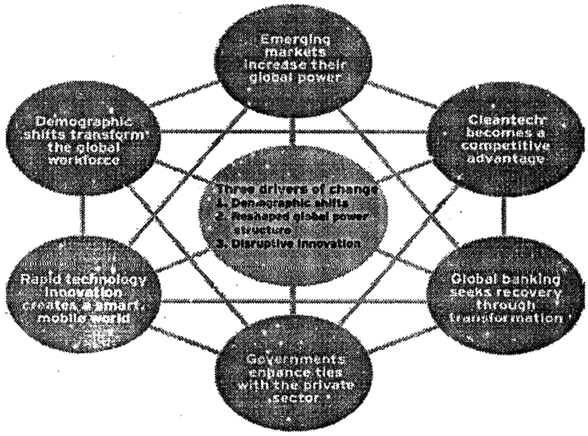

Figure 1.1 Six global trends, interconnected by three key drivers of change

Local products, in turn, can be exploited when they emerge. The result is a powerful strategic advantage to firms that canorganize globally.

Winner and losers

As these trends change the ways in which businesses operate, grow and compete, winners and losers inevitably will emerge.

The winners will be easy to spot:

- They will be the organizations that constantly monitor broad trends in the external environment, embrace technology and look for talent everywhere, especially among previously neglected segments of the workforce such as women, minorities and older workers.
- Regardless of what industry they are in or where they are headquartered, these organizations are looking outward. In so doing, they are navigating multiple jurisdictions and regulatory frameworks while adapting to local environments and attempting to create global workforces.
- They are modifying supply chains to leverage shifting labor cost structures and mitigate raw materials' price fluctuations.
- They are figuring out how cleantech fits into their growth plans and making it an integral part of their future strategy.
- National governments, meanwhile, are seeking ways to meet growth agendas while reducing cost structures and future debt obligations.

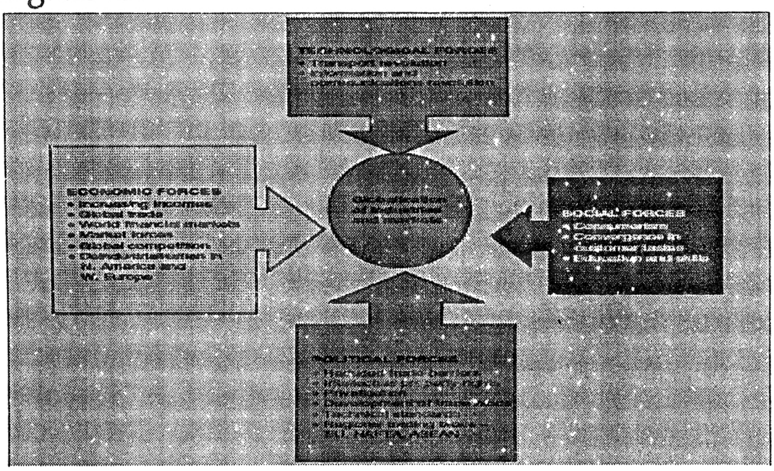

Figure1.2 : Factors that impacts on globalisation

17.1.1 Advantage of globalisation for business, customer and countries:

To Business:

- Access to mass markets increased sales
- Economies of scale and reduced costs
- Access to resources
- Access to finance and tax savings

To customers:

- Lower prices
- Wider choice
- Improved quality

To companies:

Improved living standard in both developing and developed countries. Increased Democracy- fall in communism

17.1.2 Disadvantages of globalisation for business , customer and countries:

To Business:

- Increased competition
- More demanding consumers
- Increasing volatility

To customer:

- Standardisation

To countries:

- Exploitation
- Loss of national culture and identity
- Uneven benefits.
- Environmental factors

17.1.3 The consequences of globalisation

These may include such issues as:

- the size and scale of multinational companies, which gives them significant influenceover policy making of governments;
- increased international competition may necessarily mean that some countries miss out;
- the increasing number and variety of international laws and standards may be difficult for some countries to keep up with;
- Governance issues are coming to the fore, which may cause problems for some countries with less developed legal frameworks.

17.1.4 Changes in the international business environment

These critical environmental trends include:

- globalisation in manufacturing and service provision;
- large-scale geographical changes in the distribution of manufacturing (e.g. vast increase in parts of South East Asia and stable, even declining, outputs in much of North America and Europe);
- some economies specialising in manufacturing while others specialise in service industry and consumption;
- global recession and vastly differential national economic growth rates creating rapidly shifting patterns of global wealth and income distribution;
- growth in the power and influence of economic and political unions, such as the EU, and countries, such as the BRIC economies – Brazil, Russia, India and China;

- the spread of nuclear weapons capability;
- religious fundamentalism;
- the threat of international terrorism;
- changing emphasis from multilateralism (e.g. power lying with the UN) to unilateralism (e.g. power with the USA or others);
- increasing debate on the future role of government;
- failed states;
- the prevalence of long-term unemployment and under-employment;
- the continuing integration of Europe and of other regional blocs;
- atmospheric, water, space, land and noise pollution, resource depletion and water shortages;
- global warming;
- increasing availability of information and ease of communication;
- technological advances, including ICT, biotechnology, genetics, robotics, virtual worlds;
- the demographic transition typified by declining fertility rates and increasing life expectancy leading to an ageing population in most countries – the so-called 'demographic time bomb' – with serious long-term implications for caring for the old, levels of taxation and government and individual indebtedness;
- dynamic national and international cultures, mass migration and cultural interaction, tolerance and intolerance; and
- changing attitudes towards the family, health, crime and society.

This list provides ample food for thought.Many of the issues raised have crucial implications for all governments and organisations, groups and individuals. Collectively, theseenvironmental forces are fundamentally influencing, and being influenced by, patterns ofeconomic growth, employment and investment.

17.3 Business Drivers

A business is always owned by someone. This can just be one person, or thousands. So a business can have a number of different types of ownership depending on the aims and objectives of the owners.

Most businesses aim to make profit for their owners. Profits may not be the major objective, but in order to survive a business will need make a profit in the long term. Some organisations however will be 'not-for-profit', such as charities or government-run corporations.

Types of business organisation

- Sole trader

- Partnership
- Private Limited Company ("Ltd")
- Public Limited Company ("plc")
- Co-operatives
- Franchises
- Public sector

The business drivers in the global environment that are leading all industries toward global markets and competition.The global business drivers can be divided into twogroups:

General cultural factors:

- Global communication and transportation technologies
- Development of global culture
- Emergence of global social norms
- Political stability
- Global knowledge base

Specific business factors:

- Global markets
- Global production and operations
- Global coordination
- Global workforce
- Global economies of scale

There are some drivers that motivate business to participate in global governance, self-regulation, and setting industry standards:

1 Responding to globalization, in particular to the decreasing relative power of states and the increasing relative power of civil society.

2. Staying ahead of the regulatory curve.

3. Market drivers:

- similar customer needs and tastes;
- the existence of global customers;
- Transferable marketing between different countries.

4. Competitive drivers:Enhancing a competitive position within an industry

- competitors' global strategies;
- country interdependence.

5. Cost drivers:

- scale economies and scope including product development costs –experience curve;
- favourable logistics;
- country-specific differences.

6. Government drivers are numerous and include:

- trade policies; tariff barriers; subsidies to local companies; ownership restrictions;
- local content requirements; controls over technology transfer; intellectual property

  regimes; currency and capital flows;
- marketing regulations; host government concerns; technical standards.

17.3 Business Challenges

Although the possibilities of globalization for business success are significant,fundamental forces are operating to inhibit a global economy and to disruptinternational business. The most common and powerfulchallenges to the development of global systems are below.

General:

Cultural particularism: Regionalism, nationalism, language differences

Social expectations: Brand-name expectations, work hours

Political laws: Transborder data and privacy laws, commercial regulations

Specific:

- *Standards:* Different Electronic Data Interchange (EDI), telecommunications standards
- *Reliability:* Phone networks not uniformly reliable
- *Speed:* Different data transfer speeds, many slower than United States
- *Personnel:* Shortages of skilled consultants

17.4 Information System Architecture

Information system architecture is a formal definition of the business processes and rules, systems structure, technical framework, and product technologies for a business or organizational information system. Aninformation system architecture usually consists of four layers: business process architecture, systems architecture, technical architecture, and product delivery architecture.

The architecture of an information system encompasses the hardware and software used to deliver the solution to the final consumer of services. The architecture is a description of the design and contents of a computerized system. If documented, the architecture may include information such as a detailed inventory of current hardware, software and networking capabilities; a description of long-range plans and priorities for future purchases, and a plan for upgrading and/or replacing dated equipment and software.

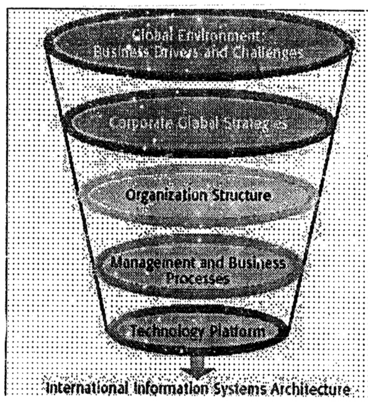

Figure 1.2 : Information Architecture

The major dimensions for developing international information systems architecture are the global environment, the corporate global strategies, the structure of the organization, the management and business processes, and the technology platform.

The basic strategy to follow when building an international system is to understand the global environment in which the firm is operating. This means understanding the overall market forces, or business drivers, that are pushing the industry toward global competition. A business driver is a force in the environment to which businesses must respond and that influences the direction of the business. Likewise, examine carefully the inhibitors or negative factors that create management challenges—factors that could scuttle the development of a global business. Once examined the global environment, and then need to consider a corporate strategy for competing in that environment. We could ignore the global market and focus on domestic competition only, sell to the globe from a domestic base, or organize production and distribution around the globe. There are many in-between choices. After we have developed a strategy, it is time to consider how to structure our organization so it can pursue the strategy. How will we accomplish a division of labor across a global environment? Where will production, administration, accounting, marketing, and human resource functions be located? Who will handle the systems function?

Then consider the management issues in implementing our strategy and making the organization design come alive. Key here will be the design of business processes. How can we discover and manage user requirements? How can we induce change in local units to conform to international requirements? How can we reengineer on a global scale and how can we coordinate systems development?

The last issue to consider is the technology platform. Although changing technology is a key driving factor leading toward global markets, we need to have a corporate strategy and structure before we can rationally choose the right technology.

After completed this process of reasoning, anappropriate international information systems architecture capable of achieving corporate goals.

The architecture should document:

- What data is stored?
- How does the system function?
- Where are components located?
- When do activities and events occur in the system? and Why does the system exist?

The basic information systems required by organizations to coordinate worldwide trade and other activities

17.5 Summary

There are several Advantage and disadvantages of globalisation for business, customer and countries. There are few consequences and challenges of globalisation. A business can have a number of different types of ownership depending on the aims and objectives of the owners. Types of business organisation are Sole trader, Partnership, Private Limited Company ("Ltd"), Public Limited Company ("plc"), Co-operative, Franchises , Public sector, Although the possiiblities of globalization for business success are significant, fundamental forces are operating to inhibit a global economy and to disrupt international business. Information system architecture is a formal definition of the business processes and rules, systems structure, te hnical framework, and product technologies for a business or organizational information system.

17.6 Self Assessment Test

1. What do you mean by Business drivers? How they help in the growth of any business?
2. What is business? Explain the business challenges?
3. What is information system? Define Information system architecture.
4. Explain the advantages and Disadvantages of globalisation.
5. What are the factors responsible for the changes in business environment?
6. What do you mean by business environment?
7. What are the factors affect to the globalisation?

17.7 Further Reading

1. Management Information Systems, New Age,S. Shajahan

2. Management Information System, PHI Publication, by S. Sadagopan

3. Management Information Systems : Managing the Digital Firm (English) 11th Edition, Pearson Publication, by Kenneth C. Laudon & Jane P. Laudon

Unit 18 Organizing International Information System

Unit Structure

18.0 Objective

The development of information systems is described with regard to the roles of the system user and the data processing specialist.

18.1 Introduction

Organisational needs are best served by coordination efforts, usually handled by a management systems office, which is also responsible for the maintenance and production of an organisational data element dictionary and a uniform code manual. Consideration must be given to production processes dealing with data and files, and their management must report at a high enough level in the organization to accomplish coordinated development at the institutional level between various administrative information systems. A model for a user's group is presented.

The three main organizational issues in globalizing a business are:

- Choosing a strategy
- Organizing the business structure (decentralized, centralized, coordinated)
- Organizing the systems management area

18.2 Global Strategies and Business Organization

Global Systems Strategy has some functions: Define the core business processes: Conduct workflow analysis, identify centers of excellence for these processes Identify the core systems to coordinate centrally: Conquer the core systems and define these systems as truly transnational, Choose an approach: Incremental, Grand Design, Evolutionary Make the Benefits Clear.

Four main global strategies form the basis for global firms' organizational structure:

- **Domestic exporter**: This strategy is characterized by heavy centralization of corporate activities in the home country of origin. Nearly all international companies begin this way, and some move on to other forms.
- **Multinational**: This strategy concentrates financial management and control out of a central home base while decentralizing production, sales, and marketing operations to units in other countries.
- **Franchiser**: Franchisers create, design, finance, and initially produce in the home country, but for product-specific reasons must rely heavily on foreign personnel for further production, marketing, and human resources.
- **Transnational**: In this strategy, nearly all the value-adding activities are managed from a global perspective without reference to national borders, optimizing sources of supply and demand wherever they appear, and taking advantage of any local competitive advantages.

18.3 Global System

World Systems Theory - Marxist theory composed of three classes

1. Periphery = global south mostly extracting raw materials that uses much labor and little capital paying low wages.
2. Core = industrialized regions mostly manufacturing goods, work uses more capital, requires skilled labor, and pays high wages.

Global System or World-system refers to the international division of labor, which divides the world into three countries this is called World Systems Theory given by Marxist. and the countries are:

- Core countries, semi-periphery countries and the periphery countries.
- Core = industrialized regions mostly manufacturing goods, work uses more capital, requires skilled labor, and pays high wages
- Periphery = global south mostly extracting raw materials that uses much labor and little capital paying low wages.
- Semi periphery = manufacturing occurs and some capital concentrates, Eastern Europe and Russia examples. Poor states can aspire to join the semi periphery
- Resources are redistributed from the underdeveloped, typically raw materials-exporting, poor part of the world (the periphery) to developed, industrialized core.

- World-system also has four temporal features. *Cyclical rhythms* represent the short-term fluctuation of economy, while *secular trends* mean deeper long run tendencies, such as general economic growth or decline. The term *contradiction*means a general controversy in the system, usually concerning some short term vs. long term trade-offs. For example the problem of under consumption, wherein the drive-down of wages increases the profit for the capitalists on the short-run, but considering the long run, the decreasing of wages may have a crucially harmful effect by reducing the demand for the product. The last temporal feature is the *crisis*: a crisis occurs, if a constellation of circumstances brings about the end of the system.

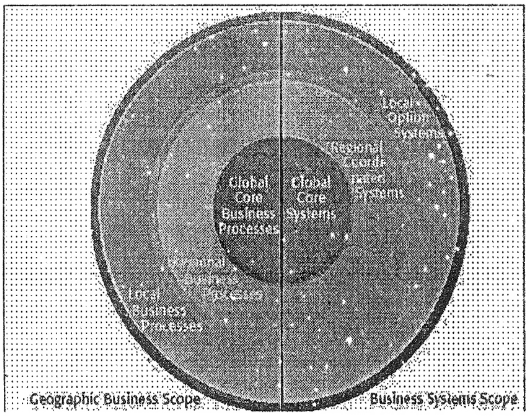

Figure 18.1: Local, Regional, and Global Systems

The configuration, management, and development of information systems tend to follow the global strategy chosen.

The four main types of information systems configuration are:

- **Centralized systems:** Systems development and operation occur totally at the domestic home base.
- **Duplicated systems:** Development occurs at the home base but operations are handed over to autonomous units in foreign locations.
- **Decentralized systems:** Each foreign unit designs its own unique solutions and systems.
- **Networked systems:** Systems development and operations occur in an integrated and coordinated fashion across all units.

SYSTEM CONFIGURATION	Strategy			
	Domestic Exporter	Multinational	Franchiser	Transnational
Centralized	X			
Duplicated			X	
Decentralized	x	X	x	
Networked		x		X

Figure 18.2: Global Strategy and Systems Configurations

There are three principles in developing a global company and information systems support structure.

1. Organize and locate value-adding activities or functions along lines of comparative advantage.
2. Develop and operate systems units at each level of corporate activity. Host country systems units should serve local needs; telecommunications and systems development should be handled by regional systems units; and transnational systems units should be established to create linkages across major regional areas.
3. Establish at world headquarters a single officer (CIO) responsible for international systems.

Managing Global Systems: The management solution:

- Agreeing on common user requirements
- Introducing changes in business processes
- Coordinating applications development
- Coordinating software releases
- Encouraging local users to support global systems

18.4 Re-organizing the business

1. Conducting strategic planning to regularly review the purpose of your organization, its overall goals and who should be doing what to meet those goals

2. Using sound principles of employee performance management to regularly review what employees should be doing to produce results, how they're doing toward their results, and what must be done to help them do a better job of achieving results

18.4.1 Reasons that need for Reorganizing:

There are a wide variety of reasons for reorganizing an organization, particularly in today's rapidly changing marketplace. However, there are several reasons for reorganization that seem to keep coming up in small businesses, whether for-profit or non-profit.

These reasons include:

1. An employee keeps complaining (and you agree) that he or she is overloaded with work.
2. Employees complain that their activities overlap.
3. An employee indicates (and you agree) that he or she does not have enough work to do during a work day.
4. Employees complain that they're reporting to more than one boss, or supervisor.
5. An employee complains that their work includes very different tasks. For example, they may have a highly complex and demanding

project (e.g., leading strategic planning) and a large routine, recurring task (sorting a great deal of the organization's daily mail).

6. Management notices a large amount of employee turnover, that is, employees don't stay long enough with the organization.
7. A department, or major function in the organization, has recurring problems.

18.4.2 Guideline for Reorganizing:

Recurring problems often seem to have little to do with the business's overall purpose and goals. However, any attempts at reorganizing may be just fine tuning, or tweaking, if not done with the long term in mind. In fact, the recurring problems may be a symptom of the organization's not having clearly thought out what its overall purpose and goals are. Without visiting the overall purpose and goals, redesign is usually a highly reactive and very short-term fix. Carefully consider conducting a strategic planning process to guide you through reviewing your organization's purpose.

18.5 Summary

Four main global strategies form the basis for global firms' organizational structure : Domestic exporter, Multinational, Franchiser and Transmissional. Global System or World-system refers to the international division of labour, which divides the world into three countries. Re-organizing the business includes conducting strategic planning and using sound principles of employee performance management. There are several reasons and guide-lines for reorganization that seem to keep coming up in small businesses, whether for profit or non profit.

18.6 Self Assessment Test

1. What are the major challenges to the development of global systems?
2. What are the five major factors to consider when building an international information systems portfolio?
3. Describe the four main strategies for global business and organizational structure.
4. Describe the different system configurations that can be used tc support different global strategies.
5. What are the major management issues in developing international systems?
6. What are the three principles to follow when organizing the firm for global business?
7. Describe three new technologies that can help firms develop

global systems.

18.7 Further Reading

1. Management Information System ,PHI Publication ,by S.Sadagopan

2. Management Information Systems : Managing the Digital Firm (English) 11th Edition,Pearson Publication, by Kenneth C. Laudon & Jane P. Laudon

3. Global Strategic Management, Second Edition, Palgrave Macmillan ,by Philippe Lasserre

4. Understanding Global Strategy, Cengage Learning ,Susan Segal-Horn and David Faulkner

Unit 19 Technology Issues and global value chains; managing global software

Unit Structure

19.0 Objective

The value chain describes the full range of activities that firms and workers do to bring a product from its conception to its end use and beyond. This includes activities such as design, production, marketing, distribution and support to the final consumer. The activities that comprise a value chain can be contained within a single firm or divided among different firms. Value chain activities can produce goods or services, and can be contained within a single geographical location or spread over wider areas. The Global Value Chains(GVC) Initiative is particularly interested in understanding value chains that are divided among multiple firms and spread across wide swaths of geographic space, hence the term "global value chain." used.

19.1 Introduction

A *value chain* includes every step a business takes to produce a product or service and deliver it to the customer from its conception to its end use and beyond. This includes activities such as research and design, production, marketing, distribution, and support to the final consumer. All of a firm's individual business processes are represented in the value chain. Research and development, production, distribution, sales and service are all business processes which most firms consider to be integral aspects of their business strategy. Corporate services act as support mechanisms for these core processes.

Although we may recognize these business processes as facets of our own firm, we may never have thought of them as comprising our own *value chain*. When thinking about our own firm and its value chain, it is useful to think of each business process as a link in the chain which adds value to the entire process, or to the entire value chain.

By managing the chain's activities strategically, a firm can create a competitive advantage for itself. This means ensuring that supply meets projected demand effectively and efficiently, with maximum consumer satisfaction. Productivity, innovation, flexibility and responsiveness to the consumer become critical attributes of the value chain and you must choose the most effective solution for each link in the chain. This may require expanding our vision outside the walls of our firm, morphing our previously domestic/internal value chain into a global value chain.

Global value chains (GVC) are a major driving force of globalization that also promotes integration on multiple levels. This volume is the product of a dialogue with policy makers in the Asian region, where economists, political scientists, management specialists, development thinkers and business executives joined together in an exploration of the multiple dimensions of supply chains, what drives them, how they operate, how they adapt in a rapidly changing world, and what they mean for development and for policy.

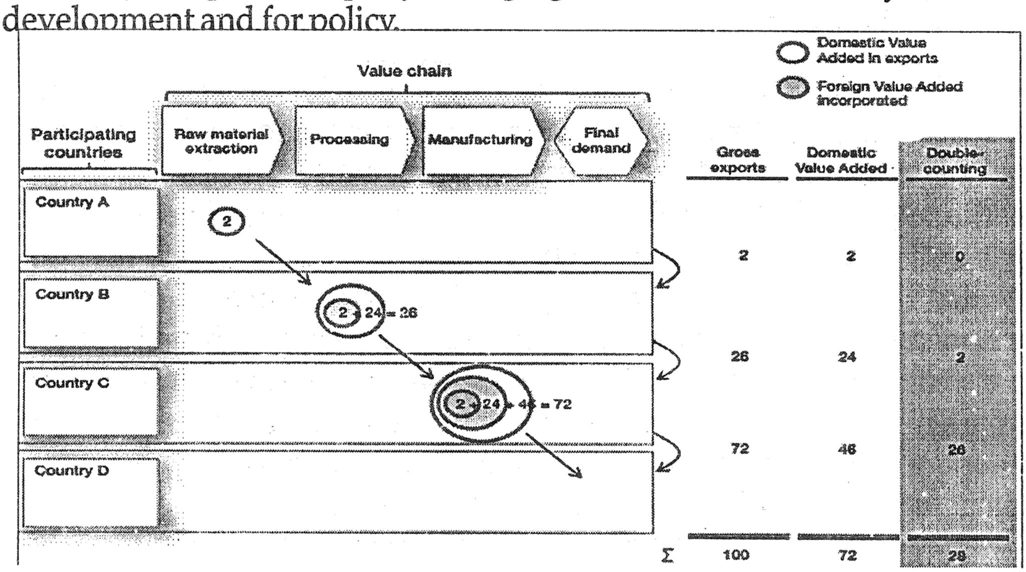

Figure 3.1: Working of GVC

What makes GVCs different?

One important point is that the patterns and effects of GVCs tend to vary in specific industries and places. Because of this, GVC research often has a sectoral or geographic focus. In "The governance of global value chains" (cited above), the co-organizers of the GVC Initiative identify three important variables to look for when studying GVCs in a particular firm, industry, or place:

1. *The complexity of transactions.* More complex transactions require greater interaction among actors in GVCs and thus stronger forms of governance than simple price-based markets. Thus, complex transactions will likely to be associated with one of the three network governance patterns (modular, relational, or captive) or integrated within a single firm (hierarchy).

2. *The codifiability of transactions.* In some industries schemes have been worked out to codify complex information in a manner in which data can be handed off between GVC partners with relative ease, often using advanced information technologies. If suppliers have the competence to receive and act upon such codified information, and if the codification schemes are widely known and widely used, then we would expect to see modular value chains emerge. If not, then lead firms might either keep the function in-house, leading to more vertical integration (hierarchy) or outsource it to a supplier that they tightly control and monitor (the captive network type) or have a dense, idiosyncratic relationship with suppliers (the relational governance type).

3. *The competence of suppliers.* The ability to receive and act upon complex information or instructions from lead firms requires a high degree of competence on the part of suppliers. Only then can the transfer of complex but codified information be achieved (as in modular networks) or intense interaction beworthwhile (as in relational networks). Where competent suppliers do not exist, lead firms either must internalize the function (hierarchy) or outsource it to suppliers that they tightly monitor and control (captive suppliers).

Furthermore, if one of these three variables changes, then value chain governance patterns tend to change in predictable ways. For example, if a new technology renders an established codification scheme obsolete, we might expect modular value chains to become more relational, and if competent suppliers cannot be found, then perhaps captive networks and even vertical integration would become more prevalent. Conversely, rising supplier competence might mean that captive networks move toward the relational type and better codification schemes might prepare the ground for modular networks.

19.1.1 Functions of the value chain:

Six business functions of the value chain:

- Research and development
- Design of products, services, or processes
- Production
- Marketing and sales
- Distribution
- Customer service

19.1.2 Barriers and their effects:

Barriers	*Effect*
1. Quality standards in developed countries like the EU limit access to these markets.	1.Satisfying these requirements makes export more expensive
2. No skilled worker available locally	2. Low level of technology and no innovation in the chain
3. No access to credit and other resources	3. No possibility to finance the necessary Investments
4. Too much local regulation or no appropriate governance structure	4.Too much paperwork is necessary, increasing the cost of production
5. Lack of infrastructure	5. High cost of transportation

Table 19.1: Barriers to value chain development

19.2 Advantage of GVCs

Global Value Chain Readiness Assessment

To successfully compete in the international business environment, it is crucial to be certain that you have the operational requirements necessary. In order to facilitate this evaluation, a readiness assessment may prove useful.

The "3 Cs" Readiness Assessment Model: Clarity, Competency and Compatibility

The 3 Cs readiness assessment model is designed to help evaluate whether or not your firm has what it takes to compete internationally. It does this by identifying three key factors of global value chain success: **clarity, competency,** and**compatibility.** In order to evaluate your firm's readiness, the model asks three simple questions:

1. Does your firm have **clarity** in a strong common vision or business strategy?
2. Do you have competitive core **competencies** which your business can leverage?
3. Is your firm able to build **compatible**, well-functioning business relationships?

In order to answer these questions firms must break down their operations and examine each aspect of their business individually. The 3 Cs model, displayed below, will help you through this process. Proceeding in steps, work through each of the three Cs, checking your firm's operational capacities against the model as you go. When you have completed the exercise you should have a better idea of whether or not your firm is ready to consider competing in the international marketplace.

19.3 Global Value Chain Challenges

- Evaluate challenges of global value chain management.
- Describe legal and ethical issues in global value chain management.
- Examine logistics in the global value chain.
- Examine financial issues in the global value chain.

19.4 Global Value Chain Strategies

- Evaluate techniques to forecast customer requirements.
- Describe inventory models that will add value to the global supply chain.
- Determine appropriate hedging strategies for supply and demand in a global value chain.
- Relate an organization's sourcing, manufacturing, and distribution strategies to its global value chain strategy.

19.5 Global Value Chain Technology

- Assess the impact of the Internet on the global value chain.
- Identify information technology systems common in global value chain management.
- Assess the impact of information technology on the global value chain.

19.6 Technology Issues and Opportunities for Global Value Chains

The technology challenges of global systems include:

- **Computing platforms and systems integration:** How the new core systems will fit in with the existing suite of applications developed around the globe by different divisions, different people, and for different kinds of computing hardware.

  Computing platforms and systems integration:
- Develop global, distributed, and integrated systems to support digital business processes spanning national boundaries
- Use of same hardware and operating systemdoes not guarantee integration.
- Establish data and technical standards.
- **Connectivity**: Problems include costs and tariffs, network management, installation delays, poor quality of international service, regulatory constraints, changing user requirements, disparate standards, and network capacity. Firms provide

international connectivity by building their own international private network using proprietary standards or by using Internet technology. However, many countries lack the communications infrastructure for extensive Internet use, and some countries face high costs, government control, or government monitoring.

- **Software:** Building software that can be used by multiple business units from different countries that have unique business processes, languages, cultures, and definitions of data. Unique challenges for application software:
    - o Cost of new interface designs
    - o Integrating new systems with old
    - o User interface design
    - o Differences in language and conventions

Both global and domestic firms increasingly are managing their hardware and software resources using global teams.

- **Offshore software outsourcing:**

In **offshore software outsourcing**, many companies now outsource some of their new systems development work or maintenance of existing systems to external vendors in another country. Any company that outsources its applications must thoroughly understand the project, including requirements, method of implementation, source of expected benefits, cost components, and metrics for measuring performance.

Offshore outsourcing reduces software development costs but companies will not save as much as they initially think. There are hidden costs to offshore outsourcing, and these costs often increase the total cost of ownership (TCO) of offshore-developed software by over 50 percent.

Major cost components of offshore software development:

Major cost components include

- Contract cost
- Vendor selection costs
- Transition management and knowledge transfer costs
- Domestic human resource costs
- Costs of improving software development processes
- Costs of adjusting to cultural differences
- Costs of managing an offshore contract

TOTAL COST OF OFFSHORE OUTSOURCING				
Cost of outsourcing contract			$10,000,000	
Hidden Costs	Best Case	Additional Cost ($)	Worst Case	Additional Cost ($)
1. Vendor selection	0%	20,000	2%	200,000
2. Transition costs	2%	200,000	3%	300,000
3. Layoffs & retention	3%	300,000	5%	500,000
4. Lost productivity/cultural issues	3%	300,000	27%	2,700,000
5. Improving development processes	1%	100,000	10%	1,000,000
6. Managing the contract	6%	600,000	10%	1,000,000
Total additional costs		1,520,000		5,700,000
	Outstanding Contract ($)	Additional Cost ($)	Total Cost ($)	Additional Cost
Total cost of outsourcing (TCO) best case	10,000,000	1,520,000	11,520,000	15.2%
Total cost of outsourcing (TCO) worst case	10,000,000	5,700,000	15,700,000	57.0%

Figure 19.2 :Total cost of offshore outsourcing

If a firm spends $10 million on offshore outsourcing contracts, that company will actually spend 15.2 percent in extra costs even under the best-case scenario. In the worst-case scenario, where there is a drop in productivity along with exceptionally high transition and layoff costs, a firm can expect to pay up to 57 percent in extra costs on top of the $10 million outlay for an offshore contract.

Although offshore software outsourcing might benefit individual firms, its broader social impact is less clear. Companies that outsource their software work may be eliminating jobs of their own employees or employees of the domestic software industry.

The cost of production in a global value chain depends on a number of factors, includingthe organizational structure chosen. Hypotheses concerning the currentproblems in the case of agricultural value chains that can be formulated:

- Inputs are too expensive, or not available, or of the wrong type
- Extension services are too far away from the farmers, or not adapted to theirneeds and possibilities
- Small agricultural producers have no access to finance
- There is a lack of intermediary organizations
- These organizations hinder the development of export
- There are no adequate marketing facilities
- Private operators can play a role in providing inputs and extension services andcan organize the marketing successfully.

19.7 Factors influencing the competition within and between value chains

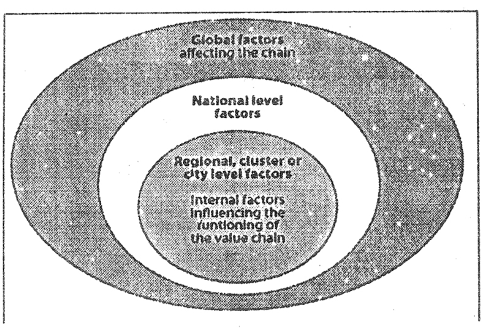

Figure 19.3: Factors affecting the global value chain

Withinvaluechains

Internal factors

- The policy of the government withrespect to this chain
- The business model chosen (theorganizational structure chosen)
- The cost of production andtransportation

External factors

The price of national andinternational transportation

- The plans of neighbouring countrieswith respect to bio fuels International regulation

<u>*Betweenvaluechains*</u>

Internal factors

- Policies with respect to differentvalue chains
- National regulation
- The profitability of one typeof biofuel chain affects thedevelopment of others**
- The cost of adding reagents to turnbiofuels into biodiesel
- The quality of the product

External factors

Liberalization of agricultural importsin Europe

Innovations in seeds & plants orproduction methods

The price of petrol and of competingproducts, close substitutes of possible replacements

Technological abilities to mixdifferent biofuels with conventionalfuel

19.8 Management Opportunities and Challenges in developing global systems

Ability to lower costs through global scaleeconomies by building international systems forproducing and selling goods and services indifferent regions of the world.

- Finding the right global business strategy
  - * Difficulties of managing change in a multicultural firm
  - * Difficulties of achieving global connectivity and integration
- Agreeing on common user requirements
- Introducing changes in business processes
- Coordinating applications development
- Coordinating software releases
- Encouraging local users to support global systems

19.9 Summary

Value chain activities can produce goods or svrvices, and can be contained within a single geographical location or spread over wider areas. The Global value Chains (GVC) Initiative is particularly interested in understanding value chains that are divided among multiple firms and spread across wide swaths of geographic space, hence the term "global value chain" used. The co-organizers of the GVC Initiative identify three important variables to look for when studying GVCs in a particular firm, industry, or place: The complexity of transactions, the condifiability of transactions, and the competence of suppliers. There are six business functions of the value chain : Research and development, Design of products, services, or processes, Production, Marketing and sales, Distribution, Customer service. The technology challenges of global systems include: Computing platforms and systems integration, Connectivity, Software, Offshore software outsourcing. There are several Factors influencing the competition within and between value chains.

19.10 Self Assessment Test

1. What do you mean by global value chain where it is used
2. What is the advantages and disadvantages of global value chains
3. Define some factors that affect global value chain.
4. What are the GVC technologies? Also define the technologies issues and opportunity for GVC.
5. Define the role of GVC in world class business.
6. Explain the strategies and barriers and their effects in GVC.

19.11 Further Reading

1. A Text on International Business, by N.V. Badi
2. Supply Chain Management: Strategy, Planning, and Operation,PHI,by Sunil Chopra and Peter Meindl
3. Supply Chain Management: For Global Competitiveness, Macmillan, Sahay, B
4. Essentials of International Business,by N.-V. Badi

Unit 20 Offshore Outsourcing: Opportunities and Challenges

Unit Structure

20.0 Objective

Offshore outsourcing is one of the hot topics influencing the global environment, politically, economically, and socially. While offshore outsourcing is associated with several benefits, these ventures also pose many risks.

20.1 Introduction

"Outsourcing" refers to the transfer of non-core operations from internal employees to an external organization. This transfer of non-core operations allows the company that outsources the work to focus on its core business. The organization that the work is outsourced to will typically have expertise in a given area, allowing it to add value and provide cost savings. For instance, many companies outsource payroll to one of the many available payroll vendors. The payroll vendors are able to add value in the area of payroll in a way that internal payroll departments can't achieve. Another example is human resources departments that outsource background checks to vendors specializing in this area rather than driving to courthouses and checking criminal records themselves.

The term "offshore" refers to where the work is being performed geographically. In other words, if a task is "offshored," then the task is being performed in another country.

Offshore outsourcing - "Offshore outsourcing" means that work is being performed by an external company in another country overseas. Many people simply refer to this as "offshoring." Offshoring is taking place all over the world. The more common locations are India, China, the Philippines, Eastern Europe and South America. A derivative of offshore is "near shore" where work from the U.S. is performed in Canada or Mexico.

Offshore outsourcing is the practice of hiring an external organization to perform some business functions in a country other than the one where the products or services are actually developed or manufactured. It can be contrasted with offshoring, in which the functions are performed in a foreign country by a foreign subsidiary. Opponents point out that the practice of sending work overseas by countries with higher wages reduces their own domestic employment and domestic investment. Many customer service jobs as well as jobs in the information technology sectors (data processing, computer programming, and technical support) in countries such as the United States and the United Kingdom - have been or are potentially affected.

The current offshore outsourcing trend started in the 1970s when large multinational companies like General Electric began sending manufacturing overseas. White collar jobs such as programming came next and then companies began outsourcing their call centers to overseas vendors. Offshoring has become much easier to do and as we shall see, now even small companies hire offshore staff in order to achieve their business goals.

A variety of jobs are offshored, including some that many people never could have imagined going overseas. Not only are jobs in finance, information technology, human resources, scientific fields, and graphic design commonly offshored, but now lawyers are doing research and doctors are reading x-rays remotely. The variety is staggering. It seems that any position that can be offshored is being offshored.

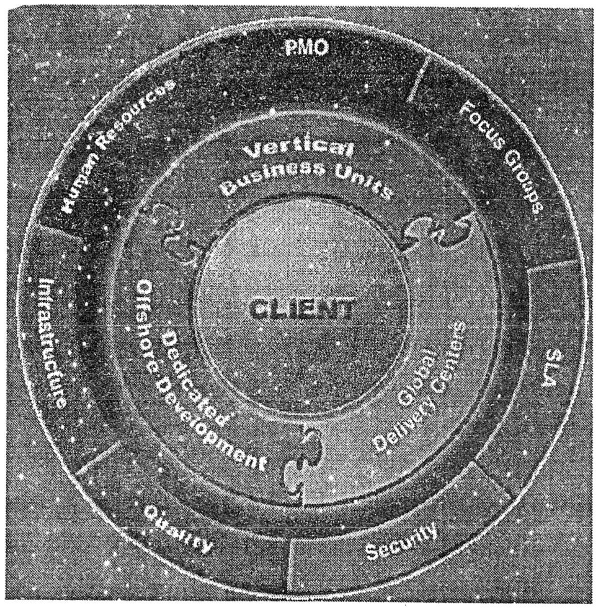

Figure 20.1 :Vast area of Offshore outsource

Work done for a company by people in another country that it typically done at a much cheaper cost. Outside of costs, offshore outsourcing may be used to complete tasks that the company may not be equipped to handle in-house. Call centers are a popular service that is often outsourced to other countries. Offshore outsourcing is often blamed for increasing unemployment in a specific country due to the lack or elimination of jobs.

Manufacturing or assembly in another country, typically one with lower wages or less strict labour regulations, of products for domestic sale or use. Many businesses use offshore production to take advantage of wage gaps between developing and developed nations, keeping prices low and profits high by lowering labour costs.

An affiliate or subsidiary company set up in a foreign country with relatively low taxes, which imports products produced by the parent company and exports them to other countries. The establishment of offshore trading companies can help a corporation to avoid tariffs and duties targeted at destination markets, by routing trade goods through a nation with less restrictive trading policies.

Outsourcing is an allocation of specific business processes to a specialist external service provider. Most of the times an organization cannot handle all aspects of a business process internally. Additionally some processes are temporary and the organization does not intend to hire in-house professionals to perform the tasks. Once the task is outsourced to the service provider, he will take the responsibility of carrying out the tasks and maintaining the organization's assets.

However prior to outsourcing any component of your business to a third-party vendor, it is essential to understand the advantages and disadvantages of outsourcing. Although outsourcing presents a variety of benefits to your organization, it could also pose difficulties if not outsourced to the right service provider.

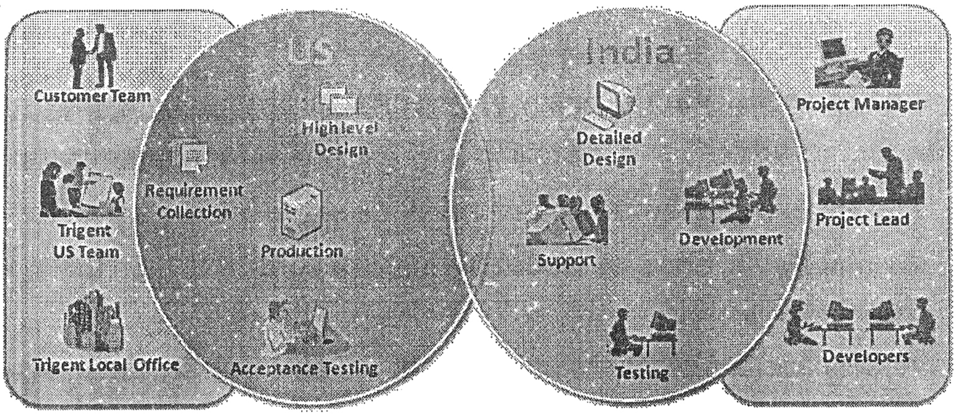

Figure 20.2: Outsourcing Vs offshoring

The most commonly outsourced streams of business include:

- IT outsourcing
- Legal outsourcing
- Content Development
- Web Design and Maintenance
- Recruitment
- Logistics
- Manufacturing
- Technical/Customer Support

Responsibilities

- Develop a vision for the role and contribution of technology in the organization.
- Define an overall hardware and software architecture to include platforms and communications.
- Coordinate developmental activities across the organization.
- Develop and implement security plans.
- Develop and implement contingency plans.
- Manage technology transfer and infusion.
- Manage vendors.

- Rationalize funding and manage expectations.
- Manage turnover.
- Promote innovation.
- Support users.
- Provide guidelines for information systems use and application.
- Develop and mentor IS expertise.
- Ensure alignment with organizational goals and objectives.
- Ensure regulatory compliance.
- Ensure security and privacy of personal information.

The key factors which have led to a growing trend of outsourcing are:

- Lack of expert-labour in some portions of the business process
- Availability of cheaper labour, whilst not comprising on the quality of output
- Ability and feasibility to concentrate on the other crucial business process

20.1.1 Key Factors of outsourcing and offshoring

Outsourcing Factors

- Cost economics
- Inadequate internal expertise and talent pool
- Rapid technology change
- Poor chargeback systems for information systems services
- Emphasis on core competency
- Top management discomfort with technology
- Management innovation
- Management imitation
- Changing goals and objectives

Offshoring Factors

- Bandwidth growth and telecommunication
- Scarce human expertise
- Increased demand
- Available global talents
- Routine tasks
- Changing goals and objectives
- Innovation

- Imitation

20.2 Advantages and Disadvantages of offshore Outsourcing

Offshoring and outsourcing has several pros and cons. Most of the time, the advantages of outsourcing overshadow the disadvantages of outsourcing.

Advantages of Outsourcing

- **Swiftness and Expertise:** Most of the times tasks are outsourced to vendors who specialize in their field. The outsourced vendors also have specific equipment and technical expertise, most of the times better than the ones at the outsourcing organization. Effectively the tasks can be completed faster and with better quality output
- **Concentrating on core process rather than the supporting ones:** Outsourcing the supporting processes gives the organization more time to strengthen their core business process.
- **Risk-sharing:** one of the most crucial factors determining the outcome of a campaign is risk-analysis. Outsourcing certain components of your business process helps the organization to shift certain responsibilities to the outsourced vendor. Since the outsourced vendor is a specialist, they plan your risk-mitigating factors better.
- **Reduced Operational and Recruitment costs:** Outsourcing eludes the need to hire individuals in-house; hence recruitment and operational costs can be minimized to a great extent. This is one of the prime advantages of offshore outsourcing.

There are numerous benefits to firms that engage in offshoring:

- ***Access to talent*** - For certain occupations there is a greater availability of highly skilled and experienced employees overseas. The U.S. has 4-5% overall unemployment and for certain in-demand positions there is practically zero unemployment. Offshore outsourcing provides another way for companies to get the job done.
- ***Cost savings*** - Companies can save 30-50% compared to the cost of a U.S.-based employee for the same level of performance, and oftentimes the offshore employees are more committed, grateful for the work.

- *Speed (filling open positions quickly)* - If you are recruiting a U.S. employee, it can take a month or more to fill certain positions. However, given the availability of offshore employees, open positions can typically be filled more quickly.
- *Elimination of recruiting costs* - Many companies pay recruiting fees to help find the most qualified employee. These fees are eliminated if you are using an offshore vendor to fulfill a certain function.
- *Time savings* - By using an offshore employee, you eliminate the time you would normally spend on searching job boards, recruiting, interviewing, orientation, managing vacation time and absenteeism, career coaching, and managing employee morale and motivation.
- *Reduction of legal exposure* - Employee issues can be time-consuming and can escalate into legal liabilities. Using offshore staff eliminates certain legal exposure to employment liabilities.
- *Flexibility* - Unlike traditional employee relationships, offshoring eliminates hiring and termination costs, allowing companies to quickly expand and contract their overseas staff in accordance with business needs.
- *Retention and loyalty* - Many times companies are rewarded with higher levels of retention and loyalty from offshore staff because overseas employees typically consider working for an American company to be prestigious.

Disadvantages of Outsourcing

- *Risk of exposing confidential data*: When an organization outsources HR, Payroll and Recruitment services, it involves a risk if exposing confidential company information to a third-party.
- *Synchronizing the deliverables:* In case you do not choose a right partner for outsourcing, some of the common problem areas include stretched delivery time frames, sub-standard quality output and inappropriate categorization of responsibilities. At times it is easier to regulate these factors inside an organization rather than with an outsourced partner.
- *Hidden costs:* Although outsourcing most of the times is cost-effective at times the hidden costs involved in signing a contract while signing a contract across international boundaries may pose a serious threat.

Lack of customer focus: An outsourced vendor may be catering to the expertise-needs of multiple organizations at a time. In such situations vendors may lack complete focus on your organization's tasks.

With all these pros and cons of outsourcing to be considered before actually approaching a service provider, it is always advisable to specifically determine the importance of the tasks, which are to be outsourced. It is always beneficial for an organization to consider the advantages and disadvantages of offshoring before actually outsourcing it.

These factors have specifically contributed to most of the outsourced partners across different locations in the world. Expertise in communication capabilities, technical expertise and favourable financial packages are the most important advantages of outsourcing to India.

20.3 Risks of offshore outsourcing

Risk of offshore outsourcing are as follows.

1. **Cost-Reduction Expectations:** The biggest risk with offshore outsourcing has nothing to do with outsourcing - it involves the expectations the internal organization has about how much the savings from offshore will be. Unfortunately, many executives assume that labor arbitrage will yield savings comparable to person-to-person comparison (e.g., a full-time equivalent in India will cost 40% less) without regard for the hidden costs and differences in operating models. In reality, most IT organizations save 15%-25% during the first year; by the third year, cost savings often reach 35%-40% as companies "go up the learning curve" for offshore outsourcing and modify operations to align to an offshore model.

2. **Data Security/Protection:** IT organizations evaluating any kind of outsourcing question whether vendors have sufficiently robust security practices and if vendors can meet the security requirements they have internally. While most IT organizations find offshore vendor security practices impressive (often exceeding internal practices), the risk of security breaks or intellectual property protection is inherently raised when working in international business. Privacy concerns must be completely addressed. Although these issues rarely pose major impediments

to outsourcing, the requirements must be documented and the methods and integration with vendors defined.

Process Discipline (CMM): The Capability Maturity Model (CMM) becomes an important measure of a company's readiness to adopt an offshore model. Offshore vendors require a standardized and repeatable model, which is why CMM Level 5 is a common characteristic. META Group observes that approximately 70% of IT organizations are at CMM Level 1 - creating a gap that is compensated for by additional vendor resources on-site. Companies lacking internal process model maturity will undermine potential cost savings.

4. **Loss of Business Knowledge:** Most IT organizations have business knowledge that resides within the developers of applications. In some cases, this expertise may be a proprietary or competitive advantage. Companies must carefully assess business knowledge and determine if moving it either outside the company or to an offshore location will compromise company practices.

5. **Vendor Failure to Deliver:** A common oversight for IT organizations is a contingency plan - what happens if the vendor, all best intentions and contracts aside, simply fails to deliver. Although such failures are exceptions, they do occur, even with the superb quality methodologies of offshore vendors. When considering outsourcing, IT organizations should assess the implications of vendor failure (i.e., does failure have significant business performance implications?). High risk or exposure might deter the organization from outsourcing, it might shift the outsourcing strategy (e.g., from a single vendor to multiple vendors), or it might drive the company toward outsourcing (if the vendor has specific skills to reduce risks). The results of risk analysis vary between companies; it is the process of risk analysis that is paramount.

6. **Scope Creep:** There is no such thing as a fixed-price contract. All outsourcing contracts contain baselines and assumptions. If the actual work varies from estimates, the client will pay the difference. This simple fact has become a major obstacle for IT organizations that are surprised that the price was not "fixed" or that the vendor expects to be paid for incremental scope changes. Most projects change by 10%-15% during the development cycle.

7. **Government Oversight/Regulation:** Utilities, financial services institutions, and healthcare organizations, among others, face

various degrees of government oversight. These IT organizations must ensure that the offshore vendor is sensitive to industry-specific requirements and the vendor's ability to: 1) comply with government regulations; and 2) provide sufficient "transparency" showing that it does comply and is thus accountable during audits. The issue of transparency is becoming more significant as requirements such as the USA PATRIOT Act and the Sarbanes-Oxley Act place greater burdens of accountability on all American corporations.

Communication and Culture: A representative example: although English is one official language in India, pronunciation and accents can vary tremendously. Many vendors put call center employees through accent training. In addition, cultural differences include religions, modes of dress, social activities, and even the way a question is answered. Most leading vendors have cultural education programs, but executives should not assume that cultural alignment will be insignificant or trivial. It is good practice for companies to embrace cultural differences and train their employees accordingly. As it relates to offshore outsourcing, cultural differences with an offshore provider have the potential to present their own set of challenges.

Turnover of Key Personnel: Rapid growth among outsourcing vendors has created a dynamic labor market, especially in Bangalore, India. Key personnel are usually in demand for new, high-profile projects, or even at risk of being recruited by other offshore vendors. While offshore vendors will often quote overall turnover statistics that appear relatively low, the more important statistic to manage is the turnover of key personnel on an account. Common turnover levels are in the 15%-20% range, and creating contractual terms around those levels is a reasonable request. Indeed, META Group has seen recent contracts that place a "liability" on the vendor for any personnel that must be replaced. The impact of high turnover has an indirect cost on the IT organization, which must increase time spend on knowledge transfer and training new individuals.

Knowledge Transfer: The time and effort to transfer knowledge to the vendor is a cost rarely accounted for by IT organizations. Indeed, we observe that most IT organizations experience a 20% decline in productivity during the first year of an agreement, largely due to time spent transferring both technical and business knowledge to the vendor. Many offshore vendors are deploying video conferencing (avoiding travel) and classroom settings (creating one-to-many transfer) to improve the efficacy of knowledge transfer. In addition, employee turnover often places a burden on the IT organization to provide additional information for new team members.

Others risk of Offshore Outsourcing are:

- Decline in employee morale
- Loss of innovation and know-how
- Public reaction to corporate citizenship
- Regional instability of host country
- Quality control and standards

According to the above points there are lots of risk exit in offshore outsourcing so we can categorise these in to five categorize; like:

Geo-Political Risks

- Political stability of country
- Civil strife or war in the area of operations
- Political relations with United States

Workforce Risks

- Education of workforce
- Experience of workforce
- Communication differences based on language differences or usage of the same language
- Cultural customs of population or subsets of population

Business Risks

- Tax implications
- Regulatory issues in country and changes to those regulations
- Customs and duties or other licensing requirements that may apply
- Export restrictions on technology
- Limitations or restrictions on import licenses
- Local insurance coverage

Legal Risks

- Legal framework of country and local authorities relating to the services

- Intellectual property rights and enforcement in country
- Limitations on ownership structures (i.e., are 100% owned subsidiaries permitted?)
- Labour laws in country

Logistical Risks

- Travel concerns to and within country
- Ability to obtain visas as needed
- Logistics of setting up operations
- Voice and data communication infrastructure, efficiency and capacity
- Power infrastructure and reliability
- Ease of installation or upgrade to infrastructure
- Infrastructure security standards in country

20.4 Challenges of offshore outsourcing

While there many identifiable benefits of offshoring; it does not come without its challenges, as well:

- *Loss of US jobs* - Offshore outsourcing is a politically charged issue. Most economists believe that offshoring is good for the economy and ultimately results in additional U.S. jobs. The theory is that the lower-level jobs get outsourced and Americans end up doing higher value work. Even assuming the economists' view is correct, having their jobs displaced is painful to those workers impacted. It might take time to retrain and/or land one of these "higher value" jobs.
- *Cost savings that don't materialize* - Expected cost savings might not result from offshore outsourcing. The offshore staff might not turn out to be as productive as expected and/or U.S. workers might end up retaining parts of the job you thought would go overseas, thereby costing you more. In addition, substantial cost inflation has occurred in certain overseas countries, namely India. Overseas wage and overhead inflation (i.e, rent, utilities, etc.) in the long run ends up impacting the cost U.S. customers pay offshore vendors.
- *Data security issues* - You don't need offshore or even offsite employees in order for your data to be compromised (or stolen), and certainly once data leaves your building you are subject to

certain risks. And while it is true that these risks are no greater overseas than if you transfer files between office locations or allow employees to work from home, legal protections in foreign countries are not the same as in the U.S. For instance, you would want to think twice about outsourcing work that involved access to valuable intangible property. If you do decide to outsource sensitive work, you will want to set up controls within the workflow process to protect yourself.

- *Quality of service* - If you are not careful, cost savings can be more than offset by service issues. For instance, Dell closed an Indian call center over customer complaints about the quality of service. To protect yourself against such losses, do a thorough analysis of the functions being considered for outsourcing. You will also want to ensure that the function is suitable for the specific country where you are outsourcing. Finally, perform due diligence on the offshore vendor before moving any function overseas.

20.5 Offshore Outsourcing Capabilities

- Adopt a systematic approach to building offshore outsourcing capabilities.
- Focus on the entire outsourcing life-cycle.
- Recognize the dynamic nature of capabilities.
- Invest in structure and people
- Perform a periodic capabilities audit.

20.6 Tips for successful outsourcing

1. Clearly define the scope and schedule of your project
2. Evaluate a serviceprovider like you'd hire a full-time employee
3. Look for specific experience fit
4. Don't choose a vendor based solely on price
5. Review portfolios and samples
6. Start small
7. Tie payment to clearly defined project milestones
8. Negotiate ownership of work up front
9. Don't forget aboutsupport after the project is complete
10. Get it in writing

20.7 Summary

The term, "offshore" refers to where the work is being performed geographical. In other words, if a task is "offshored," then the task is being performed in another country. Manufacturing or assembly in another country, typically one with lower wages or less strict labour regulations, of products for domestic sale or use. Outsourcing is an allocation of specific business processes to a specialist external service provider. The most commonly outsourced streams of business include: IT outsourcing, Legal outsourcing, Content Development, Web Design, Recruitment, Logistics, Manufacturing and Technical / Customer Support. There are several key factors of outsourcing and offshoring. Advantages of outsourcing are Swiftness, Expertise, concentration on core process, Risk-sharing, Reduced Operational, Access to talent, Cost savings, Speed, Elimination of recruiting costs, Time savings, Reduction of legal exposure, Flexibility, Retention, loyalty. Risks of offshore outsourcing are : Cost-Reduction Expectations, Data Security/ Protection, Process Discipline (CMM), Loss of Business Knowledge, Vendor Failure to Deliver, Scope Creep, Government Oversight/ Regulation, Communication and Culture, Turnover of Key Personnel, Knowledge Transfer. While there many identifiable benefits of offshoring; it does not come without its challenges, as well: Loss of US jobs, Cost savings that don't materialize, Data security issues, Quality of service. There are few tips for successful outsourcing which should be followed.

20.8 Self Assessment Test

1. What business functions can be outsourced?
2. What is offshore outsourcing? Why offshore outsourcing is required?
3. What is the riskassociated with outsourcing?
4. Explain the advantages and disadvantages of offshore outsource.
5. Which types of risk and challenges faced in offshore-outsourcing.
6. Define the field or area where and how offshore outsourcing is used.
7. Explain the key factors of offshore outsourcing.
8. What are the capabilities of offshore outsourcing?

20.9 Further Reading

1. Outsourcing to India: The Offshore Advantage, Springer; 2nd edition, Mark Kobayashi-Hillary
2. How India got back on the Global Business map Offshore Penguin, Basab Pradhan, Gaurav Rastogi
3. Off shoring IT Services : A Framework for Managing Outsourced Projects, TMH, Mohan Babu K
4. Offshore: India's Services Juggernaut, Basab Pradhan, by Basab Pradhan, Gaurav Rastogi

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