

- Emergency of global economy: many firms today operate globally - getting parts from one country, assembling them in another and managing finances and marketing activities in another country etc. It provides communication and analytical power needed.
- Transformation of industrial economies - from agrarian to industrial to knowledge -and information - based services economy. Thus IT is needed. Also, in knowledge and information-based service economies knowledge and information provide the foundation for new products and services such as credit cards, overnight package delivery, or worldwide reservation systems.
- Transformation of business enterprise to where IT has to be relied on. For instance online transactions rather than the traditional way of transacting. Also, rise of business relationships that the Internet makes possible such as between a supplier and a customer where when stock of a customer falls to reorder point, an order could be made automatically from the supplier as though there were no boundary between the supplier and the customer and the supplier were the customer store.
- The emergence of the digital firm with the result of the firms using IT to integrate business processes and build closer links with other parties such as suppliers.

1.3. How information technology has transformed organizations

1. Flattening organizations

- IT has empowered employees to make more decisions that in the past.
- So with fewer employees, an organization could achieve a desired level of output, even with fewer hours at work and away from the organization.
- Consequently organizations have downsized, reduced the number of employees and the number of levels in their organizational hierarchies.

2. Separating, work from location

- IT makes it possible to organize globally while working locally - How?
- Global networks have extended global reach,
- Distributed and portable computing
- Development of easy to use graphics user interfaces
- Employees can be scattered geographically and can work as team members even if distant apart.

3. Reorganizing work flows

- Manual work procedures have been replaced with automated work procedures, work Flows, and work processes - result:
 - Merging of some activities
 - Displacing of paper and manual routines
 - Cost reduction
 - Service improvement

4. Increasing flexibility of organizations

- Empowerment of employees
- Ability to respond to changes in the market place
- Ability to solve problems or take advantage of new opportunities
- Ability to coordinate activities (many and even dispersed) with few managers, clerks, production workers etc.

5. The changing management process

- IT is changing the management process, providing powerful new capabilities to help managers plan, organize, lead and control. Managers can perform their functions with IT application (or intervention) so much that changes would be evident in the performance of the functions.
- Managerial functions could be computerized to a very high level and where computerization of activities is not possible; computer would provide information to managers.

Included among these devices are:

Scanning devices—imaging systems, bar-code readers, mark- and character- recognition devices, and fax machines

Audio-input devices, Web cameras and video input, and photographic input (digital cameras).

Voice-recognition systems, sensors, radio-frequency identification devices, and human-biology input devices

3.2.1 Scanning devices

Imaging systems: Scanners use light-sensing equipment to translate images of text, drawings, photos, and the like into digital form. The images can then be processed by a computer, displayed on a monitor, stored on a storage device, or transmitted to another computer. Scanners are similar to photocopy machines except they create electronic files of scanned items instead of paper copies. One type of scanner is the imaging systems or image scanner, or graphics scanner which converts text, drawings, and photographs into digital.

Bar-code readers: Another scanning device reads bar codes, the vertical zebra-striped marks you see on most manufactured retail products everything from candy to cosmetics to comic books. Bar-code readers are photoelectric (optical) scanners that translate the symbols in the bar code into digital code. In this system, the price and other details of a particular item is set within the store's computer. Once the bar code has been scanned, the corresponding price and other details that describe the product appear on the salesclerk's point-of-sale terminal and on your receipt. Records of sales from the bar-code readers are input to the store's computer and used for accounting, restocking store inventory, and weeding out products that don't sell well.

Mark-recognition and character-recognition devices: There are three types of scanning devices that sense marks or characters. They are usually referred to by their abbreviations MICR, OMR, and OCR.

- Magnetic-ink character recognition (MICR) reads the strange-looking numbers printed at the bottom of checks. MICR characters, which are printed with magnetized ink, are read by MICR equipment, producing a digitized signal. The bank's reader/sorter machine employs this signal to sort checks.
- Optical mark recognition (OMR) uses a device that reads pencil marks and converts them into computer-usable form. The best-known example is the OMR technology used to read the College Board Scholastic Aptitude Test (SAT) and the Graduate Record Examination (GRE).
- Optical character recognition (OCR) uses a device that reads preprinted characters in a particular font (typeface design) and converts them to digital code. OCR characters appear on utility bills and price tags on department-store merchandise; for example, the wand reader is a common OCR scanning device.

Fax machines: A fax machine—or facsimile transmission machine scans an image and sends it as electronic signals over telephone lines to a receiving fax machine, which prints out the image on paper.

Webcams: A camera that attaches to a computer to record moving images that can then be posted on a website in real time.

Digital cameras: A digital camera uses a light-sensitive processor chip to capture photographic images in digital form on a small diskette inserted in the camera or on flash-memory chips. The bits of digital information can then be copied right into a computer's hard disk for manipulation and printing out.

Voice-recognition systems: A voice-recognition system, using a microphone (or a telephone) as an input device, converts a person's speech into digital signals by comparing the electrical patterns produced by the speaker's voice with a set of prerecorded patterns stored in the computer.

Speech recognition: promises to be the easiest method for data entry, word processing, and conversational computing, since speech is the easiest, most natural means of human communication. Speech recognition systems digitize, analyze, and classify your speech and its

LECTURER FOUR

INFORMATION SYSTEMS DEVELOPMENT



4.0 Objectives

At the end of this lecture, you should be able to:

1. Define information systems development.
2. Explain the various information systems development approaches
3. Discuss the stages of system life cycle and program development cycle.
4. Briefly explain the meaning, steps, advantages and disadvantages of prototyping.
5. Define application software packages, and outlining advantages and disadvantages of it, selecting software packages.
6. Discuss end user development and outsourcing in an IT set up.

4.1. Introduction

The systems approach to developing Information Systems takes its roots 3 ROM early management theory, specifically the General Systems Theory of Lndwig Von Bertalanffy (1968). It advocates a holistic approach, which considers the systems as a whole, instead of looking at the various functions, or parts, of the system in isolation.

It therefore causes the Systems Developer to consider the effect that the introduction of Information Technology in one part of the system would have on the rest of the system. Thus the various parts of the organization necessarily interact with each other and this impact on the success of the Information System. Silver et al came up with an IT Interactions model to show how interactions take place.

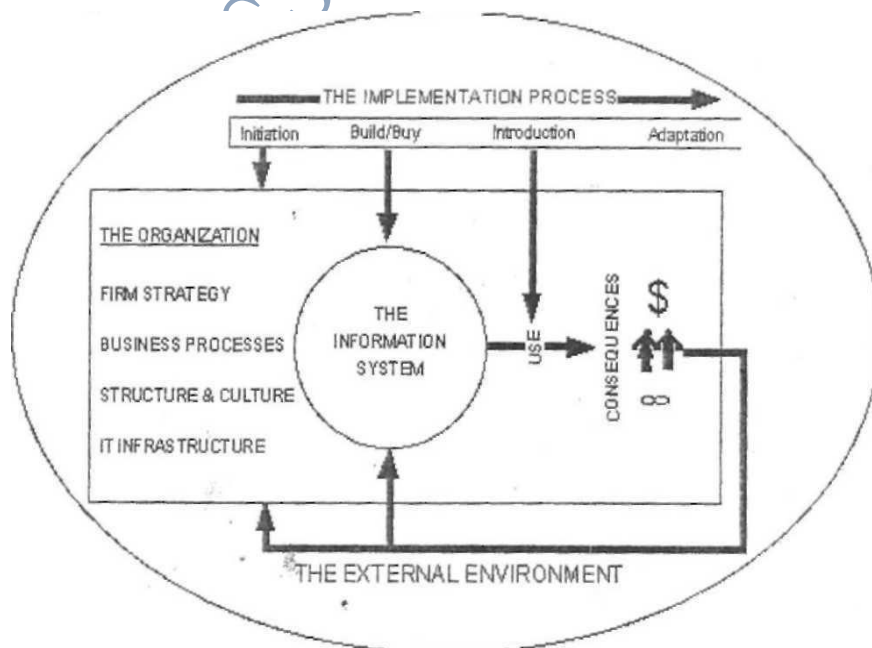


Figure 4.1: System development

Interactions Model of IS by Silver depicts succinctly how IS interacts with the rest of the organization. The model identifies that there are various effects critical to the success of IS Development. These are Systems Effects; Organization Context; the Information System and the Implementation Process. Prof. Bytheway of Cranfield University proposed a framework to help in