# Information Technology in Business Management I

## SYBMS Semester III

# Information Technology Concepts

- Data

- Information

- Knowledge

- Wisdom

# Data

- Data are the raw bits and pieces of information with no context. (Meaning)
- Data itself meaningless and lowest level of knowledge.
- Data is raw and unorganized fact that needs to processed.
- Data can be
  - Quantitative (Numbers)
  - Qualitative (Descriptive)
- Data can be in the form of text, numeric, images, audio or video. (Any computerized file)

# Examples of Data

- – Quantitative
- The result of measurement
- Count
- Some other mathematical calculations
- – Qualitative
- Mumbai is financial capital of India
- My  lucky number is 7
- Sales of May month is 10,00,000

# Information

- Once we put our data into context (giving a meaning) it becomes information.
- Information is piecemeal, fragmented and particular.
- It is timely, transitory and may be short-lived.

# Example of Information

- To a doctor, most of the contents of distinctive daily newspaper is basically information which is interesting but not helpful for effectual action as Doctor.

# Knowledge

- Information is aggregated and analyzed it becomes knowledge or in other words we can say consumption of information produces knowledge.

- It can be acquired by thinking.

- Thus, new knowledge can be acquired without new information being received.

- This knowledge can be used to make decisions, set policies and even spark innovation.

# Knowledge

- Information is 'know what' despite the fact that knowledge is 'know how'.

- Information is 'what is' at the same time as knowledge is 'what works'.

- Information that helps to achieve an action well again is knowledge.

# Example of Knowledge

- For a Doctor, a piece of writing from a medical periodical in his field of specialty that improves his capability to make diagnosis or become aware of a recently exposed disease is knowledge.

# Wisdom

- We can say someone has wisdom when they can combine their knowledge and experience to produce deeper understanding of a topic.

- It can take many years to develop wisdom on a particular topic.

- This area now covered by Artificial Intelligence and Machine Learning along with Deep Network.

# Day 2
# **Database**

- A database is an organized collection of related information.
- It is called organized collection because in a database all data is described and associated with other data.
- All information in a database should be related as well; separate databases should be created to manage unrelated information.
- For example, a database that contains information about employees should not hold information about inventory.
- Databases are not only always digital – a filing cabinet, for instance, might be considered a form of database but here, we are going to consider only digital databases.

# Database Management Systems (DBMS)

- DBMS is basically just a collection of computerized data files.
- It allows us various operation on the files, such as Adding new files to database, deleting existing files from databases, insert data in existing files, modify data in existing files, deleting data from exiting files and retrieving or querying data from existing files.
- DBMS are software that aid in organizing , controlling and using the data needed by the application programs.
- They provide the facility to create and maintain a well-organized database.
- Applications access the DBMS, which then accesses the data.
- DBMS can be single user or multiuser.
- Commonly available DBMS are Access, Oracle, MYSQL, SQL Server and DB2 etc.
- DBMS packages generally provide an interface to view and change the design of the database, create queries and develop reports

# Hierarchy of Database (Database Model)

- Database        : This is collection of Files
- File (Table)     : This is a collection of Records
- Record (Row)   : This is collection of Fields.
- Field (Column): This is collection of characters
- Character (Byte) : This is a collection of BITs

# Advantages of DBMS

- Faster Application Development
- User Friendly
- Minimum Data Redundancy
- Data Independence
- Integrity is maintained
- Sharing of Data
- File Consistency
- Improved Security

# Disadvantages of DBMS

- Cost
- Security

# Advantages of DBMS (Explanation)

- **Faster Application Development:-** As data is already stored in database, application developer has to think of only the logic required

- **User Friendly:-** DBMS makes the data access and manipulation easier for the user. User can manipulate data without an expert.

- **Minimum Data Redundancy:-** Redundancy is eliminated if not eliminated definitely it is reduced.

# Advantages of DBMS (Explanation)

- **Data Independence:-** In DBMS data dose not reside in applications but it is stored independently.
- **Integrity is maintained:-** Updates to the data has to be done only at one place, this ensures integrity.
- **Sharing of Data:-** The same information can be made available to different users at the same time.
- **File Consistency:-** DBMS is using a standard format therefore file consistency is maintained.
- **Improved Security:-** DBMS allow multiple users to access the same data resources which could lead to risk to an enterprise if not controlled. Security constraints can be defined to give access to sensitive data. Some sources of information should be protected or secured and only viewed by select individuals.

# Disadvantages of DBMS (Explanation)

- **Cost:-** Training requirements are quite costly.

- **Security:-** Even with safeguards in place, it may be possible for some unauthorized users to access the database. If one gets access to database then it could be an all or nothing proposition.

# Day 3
# Information Systems

- An Information System (IS) is a combination of people, hardware, software, communication devices, network and data resources that processes data and information for specific purpose.

- The system needs inputs from user which will then be processed data that sent to another user or other system via a network and a feedback method that controls the operation.

- In general, any specific Information System aims to support operations, management and decision-making.
- The main aim and purpose of each Information System is to convert the data into information which is useful and meaningful.
- This process consist of four basic concepts:-
  1. People, Hardware, Software and Data are four basic resources of Information Systems.
  2. Human resources consist of end users and IT specialists; hardware resources involve machines and media;

     software resources consist of programs and procedures and data resources include data knowledge base and network resources include communication media networks.
  1. A process is used to convert data into information for end users.
  2. Information processes consist of input, processing output, storage and control processes.

- All Components of IS are mutually connected and cannot exist individually.
- The output could be in terms of printouts, reports, graphics;
- input can be data, information and instructions;
- processing may involve calculations, programming and storing;
- controls could be related to decision-making and the feedback.

# Day 4
# Components of Information System

- With the help of Information Systems, enterprises and individuals can use computers to **collect, store, process, analyze and distribute** information.

- There are different types of information systems i.e.

  1. Manual (Paper and Pencil) Information System
  2. Informal (word to mouth) Information System
  3. Formal (written procedures) Information System
  4. Computer based Information System

# Computer Based Information System (CBIS)

- CBIS is a combination of people, IT and business processes that helps management in taking important decision to carry out the business successfully.

- CBISs are networks of hardware and software that people and organizations use to create, collect, filter, process, store and distribute data.

- CBISs are interrelated components working together to collect, process, store and circulate information to support decision making, coordination, control, analysis and visualization in an organization.

- Any Information process consists of input, processing, output, storage and control processes.

- CBIS comprise of People, Hardware, Software, Data, Communication devices and Network.

- In CBIS people means the IT professionals i.e. System administrator, programmers and end users i.e. persons who can use Hardware and Software for retrieving  the desired information.
- The Hardware means the tangible components of computers with different processors.
- Software means the system software, applications software and utility software.
- The data is the raw fact, which may be in the form of database.
- The data may be alphanumeric, text, image, video, audio and other form.
- Communication device means devices required for communication i.e. routers, bridges etc.
- Network means communication media i.e. Internet, Intranet, Extranet etc.

# Day 5
# Levels of Information System

- Strategic Level Systems

- Management Level Systems

- Knowledge Level Systems

- Operational Level Systems

# Strategic Level Systems

- Used for strategic manager to track and deal with strategic issues, assisting along-range planning.

- e.g. EIS (Executive Information System)

    ESS (Executive Support System)

- Used by Senior Managers

# Management Level Systems

- Used for monitoring, controlling, decision-making and administrative activities of middle management.
- i.e. MIS (Management Information System)

  DSS ( Decision Support System)
- Used by Middle Managers

# Knowledge Level Systems

- These systems support discovery, processing and storage of knowledge and data workers.

- These further controls the flow of paper work and enable group working.

- i.e. KWS Knowledge Work System)

   OAS (Office Automation System)

- Used by Knowledge and Data Workers

# Operational Level Systems

- Support operational managers tracking elementary activities that include tracking customer orders, invoice tracking etc.

- Operational Level System ensures that business procedures are followed

- i.e. TPS (Transaction Processing System)

- Used by Operational Managers

# Types of Information Systems

- A typical organization has six of information system with each supporting a specific organizational level.

- These systems include transaction processing system (TPS) at the operational level, office automation systems (OAS) and knowledge work systems (KWS) at the knowledge level, management information systems (MIS) and decision support systems (DSS) at the management level and the executive support systems (ESS) at the strategic level.

# Transaction Processing System

- Every firm needs to process transaction in order to perform their daily business operations.

- A transaction refers to any event or activity that affects the organization.

- Depending on the organization's business, transactions may differ from one organization to another.

- In a manufacturing unit, for example, transactions include order entry, receipt of goods, shipping etc., while in bank, transactions include deposits and withdrawals, cashing of cheques etc.

- To support the processing of business transactions, the transaction processing systems (TPS) are used in the organizations.

- A transaction processing system provides a way to collect, process, store, display modify or cancel transactions.

- Most of these systems allow multiple transactions to take place simultaneously.

- The data that this system collects is usually stored in databases which can be used to produce reports such as billing, wages, inventory summaries, manufacturing schedules etc.

- TPS may be defined as a type of information system that collects, stores, modifies and retrieves the day-to-day data transactions for an enterprise.

- Classic examples of such systems would be Airline Reservations Systems, Railway Reservation Systems, Banking System etc.

- TPS is used by Operational Managers. TPS collects data in detail.

- These systems are designed to process transactions virtually instantly to ensure that customer data is available to processes that require it.

Most of the TPS include one or additional of the following attributes

- Access Control TPS
- Equivalence TPS
- High Volume Rapid Processing TPS
- Trustworthiness TPS

# TPS Qualifiers

- Atomicity

- Consistency

- Isolation

- Durability

- Access Control TPS:- Most TPS come with access control to put a ceiling on users to only those allowed to accomplish so. Access control ensures that people who are not authorized to use the system are not permissible to influence or transform the transaction process.
- Equivalence TPS:- Transaction are processed in the similar format every time to ensure that full effectiveness is achieved. The TPS interfaces are designed to get hold of identical data for each transaction, despite the consequences of the source.
- High Volume Rapid Processing TPS:- TPS is designed to process transactions in an immediate to make confident that the transaction data is available to other users or processes that require it. The instantaneous processing of transactions is noteworthy to the success of certain industry such as banking.
- Trustworthiness TPS:- A TPS system is designed to be robust and trustworthy . The system is capable to make certain that the data integrity is preserved.

# TPS Qualifiers

- Atomicity

- Consistency

- Isolation

- Durability

# Office Automation System (OAS)

- Office automation implies a network of computers with a variety of available programs.
- It refers to the entire tools and methods that are applied to office activities which frame it achievable to practice written, visual and sound data in a computer-aided mode.
- An OAS is a collection of communication technology, computers and persons to perform official tasks.
- It executes office transactions and supports official activities at every organizational level.
- These activities can be divided into clerical and managerial activities.

- In addition to capturing handwritten notes, it comprises of exchange of information; management of administrative documents; handling of numerical data and meeting, planning and management of work schedules.
- OAS takes into consideration the computer applications and other problem-solving tool along with a database to transform input into output.
- Office Automation is a widespread appearance that includes an all-embracing variety of applications of computer, communication and information technologies in office surroundings.
- Thus, OAS is to use new technology to get a better working environment.

- Some of the software used in OAS are as Follows:-
  - Word Processing
  - Email
  - Voice Mail

# Word Processing

- It is used for the preparation of documents like letters, reports, memos or any type of printable material by electronic means.

- The text is entered by keyboards and displayed on the computers display unit.

- This text can be edited, stored and reproduced with the help of commands present in the word processor.

- They have facilities for spell checking, grammar checking, counting (character, lines, pages etc.) automatic page numbering, index creation, header and footer etc.

# Email

- Email or electronic mail facilities the transfer of messages or documents with the help of computer and communication lines.

- This helps in speedy delivery of mails and also reduces time and cost of sending a paper mail.

- It supports not only the transfer of text messages but also has options for sending images, audio, video and many other types of data.

# Voice Mail

- It is an important call service, allows recording and storing of telephone messages into the computers memory.

- The intended person can retrieve these messages any time.

# Knowledge Management System (KMS) / Knowledge Work System (KWS)

- A knowledge work system (KWS) is a specialized system built to promote the creation of knowledge and to make sure that knowledge and technical skills are proper integrated into business.

- It helps the knowledge workers in creating and propagating new information and knowledge by providing them the graphics, analytical, communications and document management tools.

- The knowledge workers also need to search for knowledge outside the organization.

- Thus, knowledge work system must give easy access to external databases.

- In addition, knowledge work system should have user-friendly interface to help users to get the required information quickly and easily.

- Some examples of knowledge work systems are computer-aided design (CAD) systems, virtual reality systems and financial workstations.

- KMS refers to any kind of IT system that stores and retrieves knowledge, improves collaboration, locates knowledge sources, mine storehouses for hidden knowledge, capture and uses knowledge, or some other way enhances the knowledge management process.

- KMS treats the knowledge component of any organizations activities as an explicit concern reflected in strategy, policy and practice at all levels of the organization.

- Two broad categories of knowledge exist –
  - Explicit (Clear)
  - Tacit (Stable)
- Explicit knowledge is formalized, articulated and written whereas Tacit Knowledge resides in a few often-in-just one person and has not been captured by the organization.
- Explicit knowledge is that which can be formalized easily available across the organization.
- It is articulated and represented as spoken word, written materials and compiled data.
- This type of knowledge is codified, easy to document, transfer and reproduce.
- e.g. Online Tutorials, Policy and Procedure Manuals.

- Tacit knowledge on other hand, resides in few often-in just one person and hasn't been captured by the organization or made available to others.

- It is unarticulated (unclear) and represented as intuition, perspective, beliefs and values that individuals form based on their experiences.

- It is personal, experimental and context-specific.

- It is difficult to document and communicate the tacit knowledge.

- e.g. Hand-on Skill, Special Know-How, Employee experiences.

- Knowledge base is a special kind of database for knowledge management.
- It is an Information storehouse that provides a means for information to be collected, organized, shared searched and utilized.
- It can be either machine-readable or intended for human use.
- A knowledge discovery in database system is a value-added intranet with facilities to search and identify captured knowledge or identify experts who have the knowledge.
- The system will also help us to establish contact with the expert and have dialogue with them.
- It will then capture and make available the transcripts of such discussions, whether they be on chat, email or discussion forums.

- Knowledge Discovery and Data Mining (KDD)
- It is fundamentally deals with ways and means of capturing and making obtainable knowledge of the experts to others, in electronic form.
- KDD system also assist us establish, contact and communicate with experts on various subjects, surrounded by our organization or perhaps even outside.
- Following are examples of some software used in KMS:
  – Computer-aided design (CAD) systems
  – Virtual Reality Systems
  – Financial Workstations

- Computer-aided design (CAD) systems
  - These systems are used for automating the creation and revision of designs using computers and graphics software.
  - The CAD software has the capability to provide design specifications for tolling and manufacturing process.
  - This save much time and money while making a manufacturing process.
- Virtual Reality Systems
  - These systems have more capabilities than CAD systems for visualization, rendering and simulations which almost look like real.
  - They can be used in educational, scientific and business work.
- Financial Workstations
  - They are used to combine wide range of data from internal as well as external sources.
  - This data includes contact management data, market data and research reports.
  - Financial workstations help in analyzing trading situations and large amount of financial data within no time.
  - It is also used for portfolio management.

# Management Information System (MIS)

- It refers to the data, equipment and computer programs that are used to develop information for managerial use.

- It is an integrated system which provides accurate, timely and meaningful data for management planning, analysis and control to optimize the growth of the organization.

- MIS provide decision makers with preselected types of Information.

- MIS is generally in the form of computer generated reports and usually generated from data obtained form TPS.

- Information is present in summarized form along with facility to drilldown, MIS can accessed via the web browsers.
- Like most complex systems, MIS can be described in a numbers of different ways:
  - MIS is an integrated, use machine system for providing information to support operation, management and decision making function in an organization.
  - A MIS aims at meeting the information needs of mangers, particularly with regard to the current and past operations of the enterprise.
  - In the very simple words, MIS is Management Information System.
  - MIS is a system which provides accurate, timely and meaningful data for management planning, analysis and control to optimize the growth of the organization.
  - MIS is also defined as System that aids management in making, carrying out and controlling decisions.

- MIS are specially developed to support planning, controlling and making decision making functions of middle managers.

- A MIS extracts transaction data from underlying TPSs, compiles them and produces information products in the form of reports, displays or responses.

- MIS provide information that conforms to decision making needs of managers and supervisors.

- MIS use simple routines like summaries and comparisons which enable managers to take decisions for which the procedure of reaching at a solution has been specified in advance.

- Generally, the format of reports produced by MIS is pre-specified.

- A typical MIS report is a summary report, such as report on the quarterly sales made by each sales representative of the organization.

- Another type of MIS report is an; for example exception report that specifies the exception conditions like sales made be some sales representative is for below that expected.

- Usually, MIS are used to produce report on monthly, quarterly or yearly basis.

- However, if managers want to view the daily or hourly data, MIS enables them to do so.

- In addition, they provide managers online access to the current performance as well as past records of the organization.

- A MIS is an information system that uses data collected by the TPS and uses this data to create reports in a way that managers can use it to make routine business decisions in response to problems.

- Some of the reports that this information system creates are summary, exception and ad hoc reports.

- All this is done to increase the efficiency of managerial activity.

- Airline reservation (Sear, Booking, Payment, Schedule, Boarding List, Special Needs etc.), Bank Operations (Deposit, Transfer, Withdrawal) electronically with a distinguish payment gateways, integration of department with the help of contemporary software like ERP and Logistic management application to streamline the transportation system etc. are some of the example of MIS.

# Decision Support System (DSS)

- It is an interactive computer-based information system that, like MIS, also serves at the management level of an organization.

- However, in contrast to MIS, it processes information to support the decision making process of managers.

- It provides middle managers with the information that enables them to make intelligent decisions.

- A decision support system in a bank for example, enable a manager to analyze the changing trends in deposits and loans in order to ascertain the yearly targets.

- It is a computer based information system that supports business or organizational decision making activities, DSSs serve the management , operations and planning levels of an organization (usually mid and higher management) and help to make decisions, which may be rapidly changing and not easily specified in advance, DSS can be either fully computerized, human or a combination of both.

- A properly designed DSS may be defied as an interactive software-based system intended to help decision makers compile useful information from raw data, documents, personal knowledge and / or business models to identify and solve problems and make decisions.

- DSS gives you 'what-if' scenarios.

- DSS even allows you to manipulate data directly.

- DSS are there to facilitate a manager in making operational decisions, but the ultimate burden of responsibility lies with the manager.

- Managers can some times be over-optimistic in their expectations of a DSS and develop an unrealistic reliance on the system.

- It helps make decisions by working and analyzing data that can generate statistical projections and data models.

- This systems gives support rather than replacing a manager's judgment while improving the quality of a managers decision.

- A DSS helps to solve problems while using external data.

- Decision support systems are designed for every manager to execute a specific managerial task or problem.

- Generally, they help managers to make semi-structured decisions, the solution to which can be arrived at logically.

- However, sometimes, they can also help in taking complex decisions.

- To support such decisions, they use information generated by OASs and TPSs.

- Decision support system have more analytical power as compared to other compared to other information systems.
- They employ a wide variety of decision models to analyze data or summarize vast amount of data into a form (usually form of tables or charts) that make the comparison and analysis of data easier for managers.
- They provide interactive environment so that the users could work with them directly, add or change data as per their requirements and ask new questions.
- DSS has four components:
  1. The User
  2. One or more databases
  3. Planning languages
  4. Model Base

1. The User:- The user is usually a manager with an unstructured or semi-structured problem to solve and may be at management level of an organization.

2. One or more databases:- Databases contain both routine and non-routine data from both internal and external sources.

3. Planning languages:- Planning languages can either general-purpose or special purpose allowing users to perform routine tasks and specific tasks respectively.

4. Model Base:- Model base is the brain of DSS as it performs data manipulation and computations with the data provided to it by the user and the database. The planning language in DSS allows the users to maintain a dialogue with the model base.

# ESS (Executive Support System) / EIS (Executive Information System)

- An Executive Information System (EIS) or Executive Support System (ESS) is an extension of MIS.

- It is a computer-based information system that helps in the decision making at the top level of an organization.

- The decision taken with the help of executive support system are non-routine decision that affect the entire organization and thus require judgement and sight.

- As compared to DSSs, ESSs offer more general computing capabilities, better telecommunication and efficient display options.

- They use advance graphics software to display the critical information in the form of charts and graphs that help senior executives to solve a wide range of problems.

- To make effective decisions, they use summarized internal data from MIS and DSS as well ass data from external sources about event  like new tax laws, new competitors etc.

- They filter, compress and track data of high importance and make it available to the strategic-level mangers.

- ESS help to monitor performance, track activities of competitors, identify opportunities and forecast trends.

- They also assist senior mangers in answering the following question:
  1. What business should we do?
  2. How are our competitors doing the business?
  3. Which units can be sold and which new units are to be bought?
- An EIS is the nature of Information Systems used by executives and administrators the data they entail to make informed business decisions.
- The EIS in itself is not an instrument but rather an infrastructure within a company.
- It may be defined as just not as a piece of hardware or software but an infrastructure that supplies to a firm's executives the up-to-the-minute operational data, gathered and shifted from various database.

- EIS links data from various sources both internal and external to provide the amount and kind of information executives find useful.

- These systems are designed for top management; easy to use; present information in condensed view; access organization's databases and data external to the organization.

- The typical information mix presented to the executive may include financial information, work in process, inventory figures, sales figures, market trends, industry statics and market price of the firms shares.

# Components of an EIS as Follows

| Components | Description |
|---|---|
| Hardware | Includes Input Data-Entry devices, CPU, Data Storage and Output devices |
| Software | Includes Text base software, Database and Graphic types such as time series charts, scatter diagrams, maps, motion graphics, sequence charts and comparison-oriented graphs (i.e. Bars Charts) Model base. |
| User Interface | Includes hardware (Physical) and Software (logical) components by which people (Users) interact with a machine. Several types of interfaces can be available to the EIS structure such as scheduled reports, question/answers (Q&A),menu driven, command language, natural language and input/output. |
| Telecommunication | Involves transmitting data from one place to another in a reliable networked system. |

# Expert System (ES)

- An Expert System, also known as knowledge-based system.

- It is a computer system that is designed to analyze data and produce recommendations, diagnosis and decisions that are controlled.

- A neutral system uses computers to foster the way a human brain may process information, learn and remember that information.

- An Expert System (ES) is computerized information system that allows non-expert to make decisions comparable to those of an expert.

- The aim of the expert system is to have a team of seasoned specialists holding industry-wide experience who further spread across implementation like in Defense, Government, Finance, Telecom and Engineering sectors.

- ES can be Example based, Rule-based or Frame-based.

Components of Expert System (ES) are as follows:

- **Knowledge base**

- **Database of Fact**

- **Inference Engine**

- **Explanation Facility**

- **User Interface**

# Knowledge base :-

- This includes the data, knowledge, relationships, rules of thumb (heuristic) and decision trees used by expert to solve a particular problem.

- A knowledge base is the computer equivalent of all the knowledge and insight that an expert or group of experts develop through years of experience in their field.

- The knowledge base of expert system encloses both realistic and heuristic knowledge.

- Realistic knowledge is that knowledge of the job domain that is extensively shared, characteristically found in textbooks and journals whereas heuristic knowledge is the fewer rigorous, extra experimental, supplementary judgmental knowledge of performance.

**Database of fact** :-

- This holds the user's input about the current problem.

- The user may begin by entering as much as they know about the problem or the inference engine may prompt for details or ask whether certain condition exist.

- Gradually a database of fact is built up which the inference engine used to come to a certain decision.

- The quality and quantity of data gained from the user influences the reliability of the decision.

**Inference Engine**:-

- This program contains the logic and reasoning mechanisms that simulate the expert logic process and deliver advice.

- It uses data obtained from both the knowledge base and the user to make associations and inferences, from its conclusion and recommend a course of action.

**Explanation Facility**:-

- This facility provides the user with an explanation of the logic the Expert System used to arrive at its conclusion.

**User Interface:-**

- This program allows the user to design, create, update, use and communicate with the Expert System.

**Types of Expert System Problem domains**

- ES are design to deal with imprecise data and problems that have more than one solution.

- Using a technique called fuzzy logic; an ES can deal with imprecise data by asking for a level of confidence.

- A neutral network uses computer circuitry to simulate the way in which a brain might process information.

Expert System can be of three types which are as follows:-

- **Example-based** :- In this developers enter the case facts and results. Through induction the ES converts the example to a decision tree that is used to match the case at hand with those previously entered in the knowledge base.

- **Rule-based** :- They are created by storing data and decision rules as if-then rules. The system asks the user questions and applied the if-then rules to the answers to draw conclusions and make recommendations. Rule-base systems are appropriate when a history of cases is available or when a body of knowledge can be structured with a set of general rules.

- **Frame-based** :- It organize all the information (data, description, rules etc.) about a topic into logical units called frames, which are similar to linked records in data files. Rules are then established about how to assemble or inter-relate the frames to meet the users need.

**Expert Systems Benefits and Limitations**

**Benefits / Merits / Advantages:-**

1. Can outperform a single expert.
2. Better quality and consistent decisions.


**Limitations / Demerits / Disadvantages :-**

1. Development is time consuming and costly.
2. Can handle only programmed cases.
3. Lack of commonsense.

# Failure and Success of Information Technology

**Nike**

- In the 1970s, retailers would have to place orders with Nike 9 months in advance before delivery date.

- They was able to manage to deliver their products on time.

- However, during the 1980s and 1990s, Nike's business expanded rapidly, leading to the complexity of its supply chain.

- In 1999, its profits decreased by 50% because of challenges in managing the supply chain

# Failure and Success of Information Technology

**Nike**

- Nike decided to adopt a supply chain management system from i2, a major competitor in the field of ERP (Enterprise Resource Planning) systems.

- The system was supposed to forecast sales demand and plan supplies of raw materials and finished products accordingly.

- By 2001, Nike had installed the system, with the cost of $ 400 million.

- However, the system failed.

# Failure and Success of Information Technology

**Nike**

- The newly deployed demand and supply application overestimated the demand for certain shoes in some locations and underestimated demand in others.

- Demand forecasting was one of the biggest issues.

- Demand for a number of products and locations was either overestimated or underestimated.

- As a result, some raw materials were over purchased, while inventory levels of other materials were insufficient.

- Some shoes were over manufactured, while the most demanded ones were under manufactured.

- The company reported a loss of $ 100 million in sales in the 3rd quarter of 2001 due to the problem.

# Failure and Success of Information Technology

**So, what was wrong?**

- Nike request i2 to modify the standard software in a rush.

- The company wanted to forecast demand by style, color(Colour) and size etc.

- This led to the fact that thousands of forecasts needed to be made very quickly to respond to consumer preferences and the market.

- Nike needed the customization of the software to be done soon, so the reprogramming was done in a hurry.

- The system was able to run but with bugs, causing errors.

# Failure and Success of Information Technology

**So, what was wrong?**

- Nike used both 'pilot approach' and 'plunge approach' in the adoption of the system.

- On the one hand, the company want to adopt an i2s products, instead of using existing SAP (System Application Programming) solutions, to see if i2 was better.

- On the other hand, Nike plunge the whole business operation into the new system, instead of step-by-step and part-by-part integration.

- This mixed approach was part of failure.

# Failure and Success of Information Technology

**So, what was wrong?**

- Customizing standard software requires a step-by-step systematic approach and it should be done only when if is absolutely necessary and it must be planned properly.

- In 2002, Nike fixed the problem after spending huge amount of time and money.

- The management at Nike was not a failure but a journey from failing to succeeding even through it makes the company lost out on time or money.

- The Nike case clearly illustrates the success story of the company after it failed but not all organizations can result in a positive consequence.

# Failure and Success of Information Technology

**AT& T**

- A major CRM system at AT&T at wireless had crashed during an update in November, 2003. As a result, customer service representatives could not set up or access new accounts.

- The system breakdowns, which continued through February, flooded other AT&T systems, gridlocked customer service, phone banks and sent furious customers rushing to other providers.

- The breakdown couldn't have come at a worse time for AT&T Wireless.

- It deprived the telco of thousands of potential new customers and cost the company an estimated $100 million in lost revenue.

- But that wasn't at all, the failure so damaged AT&T Wireless's reputation that its sale to Cingular in February for $41 Billion or $15 per share, which was just under half the value of AT&T Wireless's shares when it went public in April 2000.

- AT&T Wireless's mistakes offer valuable lessons.
  - It's unwise to freight major system upgrades with external complications
  - It should be understood that complex projects require flexible deadlines
  - It always pays to have a Plan B.

# MAJOR AREAS OF IT APPLICATONS IN MANAGEMENT

- IT applications are now available in all the management department; the major being
  - Customer Relationship Management (CRM)
  - Supply Chain Management (SCM)
  - Human Resource Management Systems (HRMS).

# Customer Relationship Management (CRM)

- CRM may be defined as business process in which client relationships, customer loyalty and brand value are built through marketing strategies and activities.

- CRM allows business to develop long term relationships with established and new customers while helping modernize corporate performance.

- CRM incorporates commercial and client specific strategies via employee training, marketing planning, relationship building and advertising.

- CRM establishes the benefits of generating customer loyalty, raising a market intelligence enterprise and an integrated relationship.

- CRM applications smoothen the progress to capture, consolidate, analysis and enterprise wide broadcasting of data from existing and potential customers.

# Information Technology Resources

- Open Source Software

i. Sometimes software is designed for users who need to customize the programs they use.

ii. This special need is often met by Open Source Software (OSS).

iii. It is software of any type whose source code is available to users.

iv. Source code is available in editable formats, as developers can modify this code and customize it, within certain guidelines set forth by the application's creator.

v. OSS is generally available for free but in certain cases it may a cost.

vi. A company may release an open-source version of a product it's developing to build interest in the product before it is sold.

vii. The developer also may benefit from the comments and experience of may users who don't work for the company but freely give their thoughts in an informal exchange for the software being available.

viii. When you change the source code, one requirement of OSS is the inclusion of what you changed as well as your methods.

ix. The software created after code modifications may or may not be made available for free.

# The difference between Open-Source and commercial software

- Commercially available software or proprietary software, doesn't give access to its source code because the software is someone else's intellectual property.

- As a result, users often pay for it.

- OSS, on the other hand, is a collaborative effort to the software is shared intellectual property among all who have helped develop or alter it.

# Open-Source Software Vs. Free Software

- Contrary to popular belief, neither focuses on the cost or lack there of the