ERP Systems

ERP and Related Technologies

LIMITATIONS OF THE ERP SYSTEM

The ERP system has **3 significant limitations**:

1. Managers **cannot generate custom reports** or queries without the help from a programmer and this inhibits them from obtaining information quickly, which is essential for making a competitive advantage.

2. ERP systems **provide current status only**, such as open orders. Managers often need to look past status to find trends and patterns that aid better decision-making.

3. The data in the ERP application is **not integrated with other enterprise** or division systems and does **not include external intelligence.**

There are many technologies that help to overcome these limitations. These technologies when used in conjunction with the ERP package, help in overcoming the limitations of a stand-alone ERP system and thus help the employees to make better decisions.

Some of these technologies are:

1. BUSINESS PROCESS RE-ENGINEERING (BPR)

2. MANAGEMENT INFORMATION SYSTEMS (MIS):

3. DECISION SUPPORT SYSTEMS (DSS)

4. EXECUTIVE INFORMATION SYSTEMS (EIS)

5. DATA WAREHOUSING

6. DATA MINING

7. ON-LINE ANALYTICAL PROCESSING (OLAP)

8. SUPPLY CHAIN MANAGEMENT(SCM)

BUSINESS PROCESS RE-ENGINEERING (BPR)

DEFINITION :

- Dr. Michael Hammer defines BPR as " the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, services and speed."

- One of the main tools for making this change is the Information Technology (IT).

- Any BPR effort that fails to understand the importance of IT, and goes through the pre-BPR analysis and planning phases without considering the various IT options available, and the effort of the proposed IT solutions on the employees and the organization is bound to crash during take off.

ADVANTAGES OF BPR

1. It **helps in integrating the various business processes** of the organization.

2. With good ERP package, the organization will be able to achieve dramatic improvements in areas such as cost, quality, speed, etc.

   Hence, many BPR initiatives are used in ERP implementation.

MANAGEMENT INFORMATION SYSTEMS (MIS)

DEFINITION :

MIS is a computer – based system that optimizes the collection, collation, transfer and presentation of information throughout an organization, through an integrated structure of databases and information flow.

The main characteristics of MIS are:

1. MIS **supports data processing** functions of transaction handling and record keeping.

2. MIS **uses an integrated database** and supports a variety of functional areas.

3. MIS **provides operational, tactical and strategic levels of organization with timely, structured information.**

4. MIS **is flexible** and can adapt to the changing needs of the organization.

Comparison of MIS vs DPS

	MIS		DPS(DATA PROCESSING SYSTEM)
1	It uses an integrated database.	1	It does not use an integrated database.
2	It provides greater flexibility to the management	2	It provides no such flexibility
3	Integrates the information flow between functional areas.	3	DPS tends to support a single functional area.
4	Focus on information needs of all levels of management	4	DPS focus on departmental-level support

DECISION SUPPORT SYSTEMS (DSS)

DEFINITION:

Decision support systems are interactive information systems that rely on an integrated set of user-friendly software and hardware tools, to produce and present information targeted to support management in the decision making process.

- Managers **spend a lot of time and effort in gathering and analyzing information** before making decisions. Decision support systems were created to assist managers in this task.

- A DSS can help **close this gap** and allow managers to improve the quality of their decisions.

- To do this, the DSS hardware and software employ the latest technological innovations, planning and forecasting models, 4th generation languages and even artificial intelligence.

The main characteristics of a DSS are:

1.A DSS is designed to address **semi-structured** and **unstructured problems**.

2.The DSS mainly supports **decision-making at the top management level.**

3.DSS is **interactive, user-friendly** and can be used by the decision maker with little or no assistance from a computer professional.

4.DSS makes **general purpose models, simulation capabilities and other analytical tools available** to the decision maker.

Comparison of DSS vs MIS

DSS	MIS
1 It focuses on decision – making.	1 It emphasizes on planning reports on a variety of subjects.
2 Quite unstructured and is available on request.	2 It is standard, scheduled, structured and routine.
3 It is immediate and user-friendly.	3 It is constrained by the organizational system.

EXECUTIVE INFORMATION SYSTEMS (EIS)

DEFINITION:

EIS is a decision support system especially made for senior level executives.

- Top level executives and decision makers face many problems and pressures. They have to make the right decisions at the right time to take the company forward.
- An EIS is concerned with how the decisions affect an entire organization.
- An EIS takes the following into considerations:
  - The overall vision and mission of the company and the company goals.
  - Strategic planning and objectives.
  - Organizational structure.
  - Crisis management/ contingency planning.
  - Strategic control and monitoring of overall operations.
- Successful EIS are easy to use, flexible and customizable and use the latest technological innovations.

DATA WAREHOUSING

1. If operational data is kept in the database of the ERP system, it can create a lot of problems.

2. As time passes, the amount of data will increase and this will affect the performance of the ERP system.

3. However once the operational use of the data is over, it should be removed from the operational databases.

IMPORTANCE OF DATA WAREHOUSING

- The primary concept of the data warehousing is that the **data stored for the business analysis can be accessed most effectively by separating it from the data in operational systems.**
- The most important reason for separating data for business analysis, from the operational data, has always been the potential performance degradation on the operational system that can result from the analysis processes.
- High performance and quick response time is almost universally critical for operational system.

DATA MINING

DEFINITION

Data mining is the process of identifying valid, novel, potentially useful and ultimately comprehensible information from databases that is used to make crucial business decisions.

- The main reason for needing automated computer systems for intelligent data analysis is the enormous volume of existing and newly appearing data that require processing.

- The amount of data accumulated each day by various businesses, scientific and governmental organizations around the world is daunting.

- Research organizations, academic institutions and commercial organizations create and store huge amounts of data each day.

- It becomes impossible for human analysts to cope with such overwhelming amounts of data.

- Two other problems that surface when human analysts process data are:

  i. The inadequacy of the human brain when searching for complex multi-factorial dependencies in the data.

  ii. The lack of objectiveness in analyzing the data

ADVANTAGES

- A human expert is always a hostage of the previous experience of the investigating other system.
- Sometimes this helps, sometimes this hurts, but it is almost impossible to get rid of this fact.
- While data mining does not eliminate human participation in solving the task completely, it significantly simplifies the job and allows an analyst, who is not a professional in statistics and programming to manage the process of extracting knowledge from data.

ON-LINE ANALYTICAL PROCESSING (OLAP)

DEFINITION

OLAP can be defined in five words – Fast Analysis of Shared Multi-dimensional Information.

- **Fast** : means that the system is targeted to deliver most responses to users within about 5 seconds, with the simplest analysis not taking more than one second and very few taking more than 20 seconds.
- **Analysis**: means that the system can cope with any business logic and statistical analysis that is relevant for the application and the user, and keep it easy enough for the target user.
- **Shared**: means that the system implements all the security requirements for confidentiality and if multiple write access is needed, concurrent update locking at an appropriate level.
- **Multi-dimensional**: means that the system must provide a multi-dimensional conceptual view of the data, including full support for hierarchies and multiple hierarchies.
- **Information**: is refined data that is accurate, timely and relevant to the user.

Importance

- OLAP technology is being used in an increasingly wide range of applications.
- The most common are sales and marketing analysis, financial reporting and consolidation and budgeting and planning.
- OLAP is being used for applications such as product profitability and pricing analysis; activity based coating; manpower planning and quality analysis or for that matter any management system that requires a flexible, top down view of an organization.

SUPPLY CHAIN MANAGEMENT(SCM)

DEFINITION:

A supply chain is a network of facilities and distribution options that performs the function of procurement of materials, transformation of these materials into intermediate and finished products and the distribution of these finished products to the customers.

1. Supply chains exist in both service and manufacturing organizations, although the complexity of the chain may vary greatly from industry to industry and firm to firm.
2. Traditionally, marketing, distribution, planning, manufacturing and the purchasing organizations along the supply chain operated independently.

3. These organizations have their own objectives which are often conflicting.

4. There is a need for a mechanism through which these different functions can be integrated together.

5. Supply chain management is a strategy through which such integration can be achieved.