Information system applications:

1. **Business support.**
2. **E-commerce.**
3. **Security.**

1. Business support systems:

Different types of information systems are used by the various management levels of an organization. They support the objectives of the business by increasing the efficiency of business processes, cutting supply costs, improving levels of customer service and improving managerial decision-making.

Applications at Different Management Levels:

1. Transaction Processing Systems:

Common modules of a TPS include:

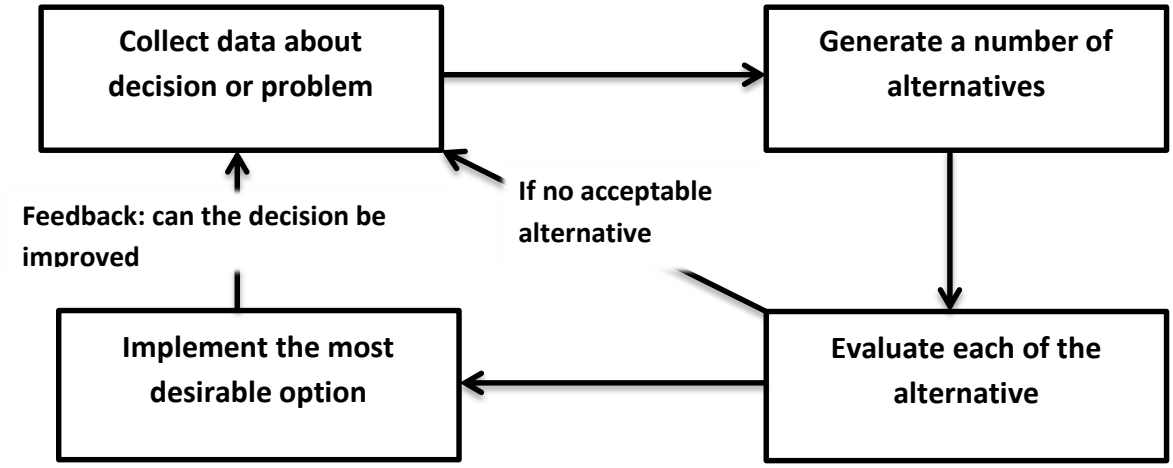
- Order processing: orders for goods or services can enter the system from customers, salespeople, or other internal departments.
- General ledger: details of all transactions affecting the accounts of the company are recorded to simplify bookkeeping and reporting.
- Accounts payable and receivable: data generated from buying orders can be used to improve debt collection and cash flow.
- Inventory management: IS is commonly used for tracking of materials and for linking the organization to suppliers.
- Payroll: employee details, pays, etc.

2. Management Information Systems:

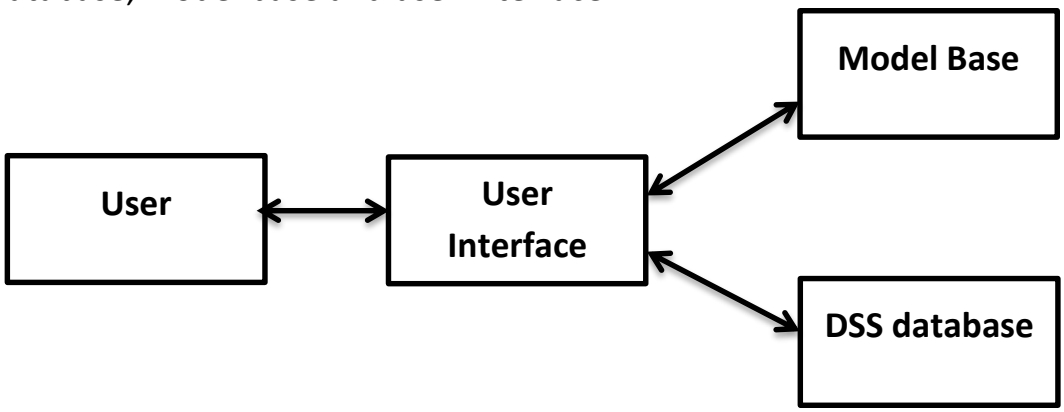
Management Information Systems (MIS) are systems that use the data generated by the TPS to help lower and middle management in their decision making. MIS use a variety of techniques to process, summarize and present the information in the form of useful reports: tables, statistics, graphics, etc.

3. Decision Support Systems

Decision Support Systems (DSS) are systems that assist managers with very specific types of decision-making situations. The next Figure illustrates the various steps of the typical decision making process.



The following diagram of a DSS shows the three main components; the database, model base and user interface.



- **DSS Database**. This database contains current and historical data from all the relevant business applications.

- **Model base**. This is a library of analytical tools that can be used to evaluate and represent data, and data retrieval tools to select, sort and summarize, and the ability to test possible scenarios through sensitivity analysis and goal seeking.

- **User Interface**. When a user requires a report or enquiry to be performed by the DSS, he or she will enter the request in a high level, user friendly business language. These user interfaces also offer stylish output formatting with, for example, the results being presented in text format or as business charts.

4. Executive Information Systems:

Executive Information Systems (EIS) provide rapid access to both internal and external information, often presented in graphical format, but with the ability to present more detailed underlying data if it is required.

Strategic Systems:

An important special type of organizational information system is used in business: strategic information systems.

The following three possible strategies are typically distinguished.

1) **Low-cost strategy**: use of the information systems to produce important cost-savings and thus offer services/products at a lower price (or increase profit limits). One typical example is the use of alternative marketing or distribution channels such as using the *Internet* for receiving orders and eliminating middlemen such as dealers.

2) **A differentiation strategy**: use of information systems to add value to your products or services. Technology can enhance quality through better manufacturing processes (e.g. a quality control system or automated manufacturing). Other possibilities are the use of computer and communication technologies to enhance after-sales support.

3) **A niche marketing strategy**: using information systems technology to service very small, isolated or exclusive markets that have specific demands. A good example is the publishing industry: An example in the publishing technology is the production of small design of “textbooks on demand”.

Intelligent Systems:

Artificial intelligence (AI) is the branch of computer science concerned with understanding the nature of human intelligence with the goal of simulating aspects of it with a computer. There are four areas of AI research that have made some progress towards the goal of an intelligent machine:

- **Natural languages:** the ability for computers to understand the spoken word.
- **Robotics:** where machines perform co-ordinated physical tasks.
- **Visual perception:** the ability of machines to recognize visually shapes and objects.
- **Expert Systems:** systems developed to simulate the decision-making behavior of humans in a narrow area of expertise.

Data Warehouses, Data Mining and OLAP:

1) **Data warehouses:** Business managers have only recently started to realize how much valuable information is hidden inside the many different databases underlying their information systems. Data warehouses can be used to correlate and analyze the information contained in different databases within the same organization.

2) **On-line analytical processing:** *On-line analytical processing (OLAP)* is concerned with the real-time analysis of large business databases to find trends and inter-relationship by managers and decision-makers.

3) **Data mining:** The huge amounts of information often make it very difficult for humans to recognize important trends within the masses of data in the data warehouse. *Data mining* is the use of statistical methods, packaged in a single computer package to discover deep or hidden data interrelationships.