2.1. EXECUTIVE INFORMATION AND SUPPORT SYSTEMS

Many BI activities evolved from two tools:

1) **Executive Information Systems (EIS):** An EIS is a computer-based system that serves the information needs of top executives. It provides rapid access to timely and relevant information, to aid in monitoring an organisation's performance by directly accessing management reports and to improve managerial growth and learning.

   An EIS is very user friendly and supported by graphics. It provides the capabilities of exception reporting (i.e., reporting only the results that deviate from a set standard) and drill-down (i.e., investigating information in increasing detail). An EIS is also easily connected with online information services and e-mail.

2) **Executive Support Systems (ESS):** An ESS is a comprehensive support system that goes beyond EIS to include analysis support, communications, office automation, and intelligence support.

   EIS and ESS vary in their capabilities and benefits. Capabilities common to many EIS/ESS are summarised in **table 2.1**:

Table 2.1: Capability of EIS/ESS

Capability	Description
Drill-Down	The ability to go to additional details at one or several levels. It can be done through a series of menus or by direct queries (using intelligent agents and natural language processing).
Critical Success Factors (CSF)	The factors most critical for the success of business. These can be organisational, industry, departmental, etc.
Key Performance Indicators (KPI)	The specific measures of each CSF.
Status Reports	The latest data available on KPI or some other metric, ideally in real-time.
Trend Analysis	Short-, medium-, and long-term trend of KPI or metrics, projected using forecasting methods.
Ad hoc Analysis	Analysis made at any time and with any desired factors and relationships.
Exception Reporting	Using reports that highlight deviations larger than certain thresholds. Reports may include only deviations.
Slicing and Dicing	Rearranging data so that they can be viewed from different perspectives.

2.2.1. Introduction

➤ Artificial intelligence (AI) technologies are being used in a variety of ways to improve the decision support provided to managers and business professionals in many companies.

➤ AI-enabled applications are at work in information distribution and retrieval, data mining, product design, manufacturing, inspection, training, user support, planning, resource scheduling and complex resource management.

➤ A **Business Expert System (BES)** is a knowledge based information system, which is based on artificial intelligence. A Knowledge Based information system adds a knowledge base that uses its knowledge about a specific, complex application area to act as an expert.

➤ Also, BES provides decision support to managers in the form of advice from an expert in a specific problem area such as medical, engineering and business. BES is interactive in nature and it is able to answer the questions asked by a user. For answering the questions, an expert system searches its knowledge base for facts and rules and explains its reasoning process and results in the expert advice to the end user. The main components of BES are:

   i) **Knowledge Base:** Knowledge base contains the facts about the specific expert area and heuristics that describe the reasoning procedures of an expert on the subject.

   ii) **Inference Engine:** The inference engine contains the logic of reaching an inference from the stored data and from the knowledge base.

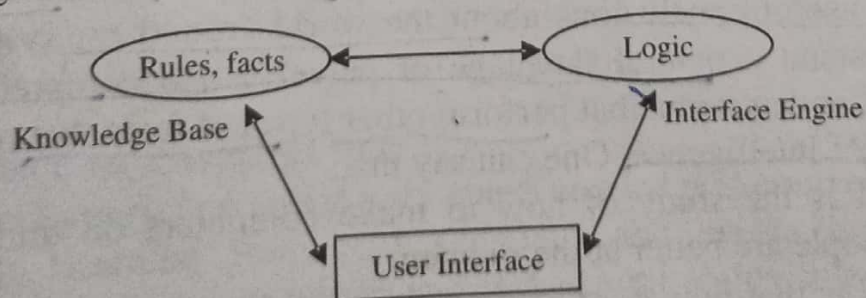   iii) **User Interface:** The user views and interacts with the system through a user interface.

Figure 2.1: Components of BES

2.2.2. Meaning and Definition of Artificial Intelligence

➤ Artificial intelligence (AI) is a field of science and technology based on disciplines such as computer science, biology, psychology, linguistics, mathematics, and engineering.

➤ The goal of AI is to develop computer that can think, as well as see, hear, walk, talk, and feel. A major thrust of artificial intelligence is the development of computer functions normally associated with human intelligence, such as reasoning, learning, and problem solving.

➤ Main **attributes** of Intelligent Behavior are:
  i) Think and reason.
  ii) Use reason to solve problems.
  iii) Learn or understand from experience.
  iv) Acquire and apply knowledge.
  v) Exhibit creativity and imagination.
  vi) Deal with complex or perplexing situations.
  vii) Respond quickly and successfully to new situations.
  viii) Recognize the relative importance of elements in a situation.
  ix) Handle ambiguous, incomplete, or erroneous information.

➤ Artificial intelligence is the field of research related to the demonstration of intelligence by machines. This includes, but is not limited to, the ability to think, see, learn, understand, and use common sense.

➤ **According to John McCarthy**, "the use of the term artificial intelligence (AI) to describe computers with the ability to mimic or duplicate the functions of the human brain".

➤ **According to Rich and Knight,** "The study of how to make computers do things which, at the moment people do better".

➤ AI is a branch of computer science concerned with the study and creation of computer systems that exhibit some form of intelligence: systems that learn new concepts and tasks, systems that can reason and draw useful conclusions about the world around us, systems that can understand a natural language or perceive and comprehend a visual scene, and systems that perform other types of feats that require human types of intelligence. One can say that:
  i) AI is the study of how to make computers do things at which, people are better at the moment.
  ii) AI is that branch of computer science dealing with symbolic, non-algorithmic methods of problem solving.
  iii) AI is that part of computer science concerned with designing intelligent computer systems that exhibit the characteristics used to associate with intelligence in human behavior.
  iv) AI is a mindset, a way of looking at and solving problems from a particular point of view.