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Enterprise Resource Planning & Expert Systems

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Abstract: Enterprise resource planning is one of the major set of modules of enterprise systems being implemented in various organizations across the globe. It seeks to standardize, streamline, and integrate the various operations and information flows in a company by synergizing its resources, that is, men, material, money, and machinery, through IT. ERP is one of the most advanced business management applications available in the market today and supports most of the business processes of manufacturing as well as service companies in a wide variety of industries.

Today, almost every large company is standardizing its business processes on ERP systems. ERP automates the tasks involved in performing a business process-such as order fulfilment, which involves taking an order from a customer, shipping it, and billing for it. It is the solution for the better project management.

Expert Systems are computer systems or programs that use artificial intelligence techniques to solve problems that ordinarily require a knowledgeable human. The method used to construct such systems, knowledge engineering, extracts a set of rules and data from an expert or several experts through extensive questioning. Expert systems imitate human experts in many different fields of expertise. Such systems contain rules that help a common individual answer expert question. Expert systems are designed to be 'expert' only in a very narrow and specific task or subject field. They contain the acquired expert knowledge and try to imitate the expert's evaluation processes to offer a conclusion.

Keywords: Business, Enterprise, Expert, Information, Management, Planning, Resource.

INTRODUCTION

ERP systems promise to provide an integrated application environment with fast and seamless access to single unified information business-wise, thus representing a catalyst for business process change. An international research organization, Gartner, has declared that ERP will become the basic infrastructure to run a business enterprise. Therefore, many organizations are currently considering these systems as the IT platform capable of enabling the shift to an integrated and process-oriented business design. ERP has been widely adopted globally, initially by consumer products and industrial and distribution companies and recently by utilities, insurance companies, banks, and even governments and universities.

ERP is a fully integrated business management system covering logistics (materials, production, sales and distribution, plant maintenance, quality management, project management, production planning, etc.), accounting (finance and controlling), and human resources, while incorporating industry-specific solutions and best business practices world-wide. Whenever data are entered into the system, these are processed and stored immediately, and thus they provide real-time, online information for decision making or analysis.

ERP Improves Company's Business Performance

ERP automates the tasks involved in performing a business process- such as order fulfilment, which involves taking an order from a customer, shipping it, and billing for it. With

ERP, when a customer service representative takes an order from a customer, he or she has all the information necessary to complete the order. Everyone else in the company sees the same computer screen and has access to the single database that holds the customer's new order. When one department finishes with the order it is automatically routed via the ERP system to the next department.

To find out where the order is at any point, one needs only to log into the ERP system and track it down. The order process moves like a bolt of lightning through the organization, and customers get their orders faster and with fewer errors than before. ERP can apply that same magic to the other major business processes, such as employee benefits or financial reporting.

ERP as a Great Equalizer

ERP also can make a difference at the shipping and distribution end of a company. According to Ashley Mills of the British controls company, Eurotherm, 'Our ERP system has cut out duplications, delays and mistakes on delivery times, and manufacturing has become more flexible. Shipments can go direct, and are therefore smaller and cheaper. In addition, there's no need to stock materials or finished units, so stocks don't become obsolete and have to be written off.'

ERP –The Data Flows like a River

ERP is not confined within the walls of a single entity. Its data flow, go out to suppliers, vendors, customers, and prospects. Information is presented on the Internet and transferred to other computers on a network at the speed of light, or around the world via cable and radio beams bounced off satellites. Design and product development can be a collaborative process without the barriers of space and time. Groupware, data management, and communications combine to allow everyone to sit in the same office, regardless of where they are physically located.

E-mail and the Web have exploded onto the scene as mandatory business requirements. They have even levelled the playing field to a point where the size of a company is far less apparent. The Web offers a great resource and network capability that allows one to offer direct ordering of products and services and traditional order management services and improve customer interaction. This ultimately lessens the cost per order and allows one to focus more on the customer's needs and less on traditional tasks.

MODULES OF ERP

An ERP system consists of a variety of functions that are linked together. The various modules of an ERP system include financial accounting, controlling, asset accounting, materials management, production planning for discrete as well as process manufacturing, quality management, plant maintenance, sales and distribution, human resource management, project management, etc. Apart from these, it also has industry-specific solutions such as oil, gas, steel, cement, auto, textile, defence, banks, etc. Although ERP features vary from application to application, the typical ERP functionally covers the following core enterprise functions and the associated sample modules. Each module works separately to perform specific data processing functions.

Finance Modules: - Finance modules support the following book-keeping, bill paying, and other traditional accounting and finance functions.

- General ledger- keeps centralized charts of accounts and corporate financial balances.
- Accounts receivable- tracks payments due to a company from its customers.
- Accounts payable- schedules bill payments to suppliers and distributors.
- Fixed assets- managers' depreciation and other costs associated with tangible assets such as buildings, property, and equipment.

Manufacturing and Logistics: - Manufacturing and logistics modules consist of a group of applications for planning production, taking orders, and delivering products to the customer.

- Production planning- performs capacity planning and creates a daily production schedule for a company's manufacturing plant.

- Materials management- controls purchasing of raw materials needed to build products.
- Sales and distribution- tracks activities from the receipt of a request for qualification to billing and shipping the product.
- Customer service management- administers installed base service agreements and checks contracts and warranties when customers call for help.

Human Resources: - Human resources include modules for handling personnel-related tasks for corporate managers and individual employees.

- Payroll- handles accounting and preparation of cheques related to employee salaries, wages, and bonuses.
- Human resources administration- automates personnel management processes including recruitment, business travel, and vacation allotments.

According to American Market Research (AMR), financial accounting, customer order management, and MRP-2 are the most preferred modules of ERP in organizations worldwide.

EXPERTS SYSTEMS

These are computer systems or programs that use artificial intelligence techniques to solve problems that ordinarily require a knowledgeable human. The method used to construct such systems, knowledge engineering, extracts a set of rules and data from an expert or several experts through extensive questioning. This material is then organized in a format suitable for representation in a computer and a set of tools for inquiry, manipulation, and response are applied. While such systems do not often replace the human experts, they can serve as useful adjuncts or assistants; for example, an aid to geologists in interpreting mineral data. Expert systems imitate human experts in many different fields of expertise. Such systems contain rules (such as decision tables) that help common individual answer expert questions. This is a classical example of how deskilling can affect people: imagine you are an expert rock identifier and people from around the world treat you like a living national treasure because of your brilliant ability to identify rocks. One day, a system is built that contains all the rules you intuitively use to make your rock identification decisions. By answering a few simple question presented by the expert system, a human can identify a rock just as well as you can. Expert systems are built with decision-making rules, and on the basis of a series of questions, they narrow down the correct answer. One early and influential expert system was MYCIN, a disease diagnosis system.

Advantages of expert systems:

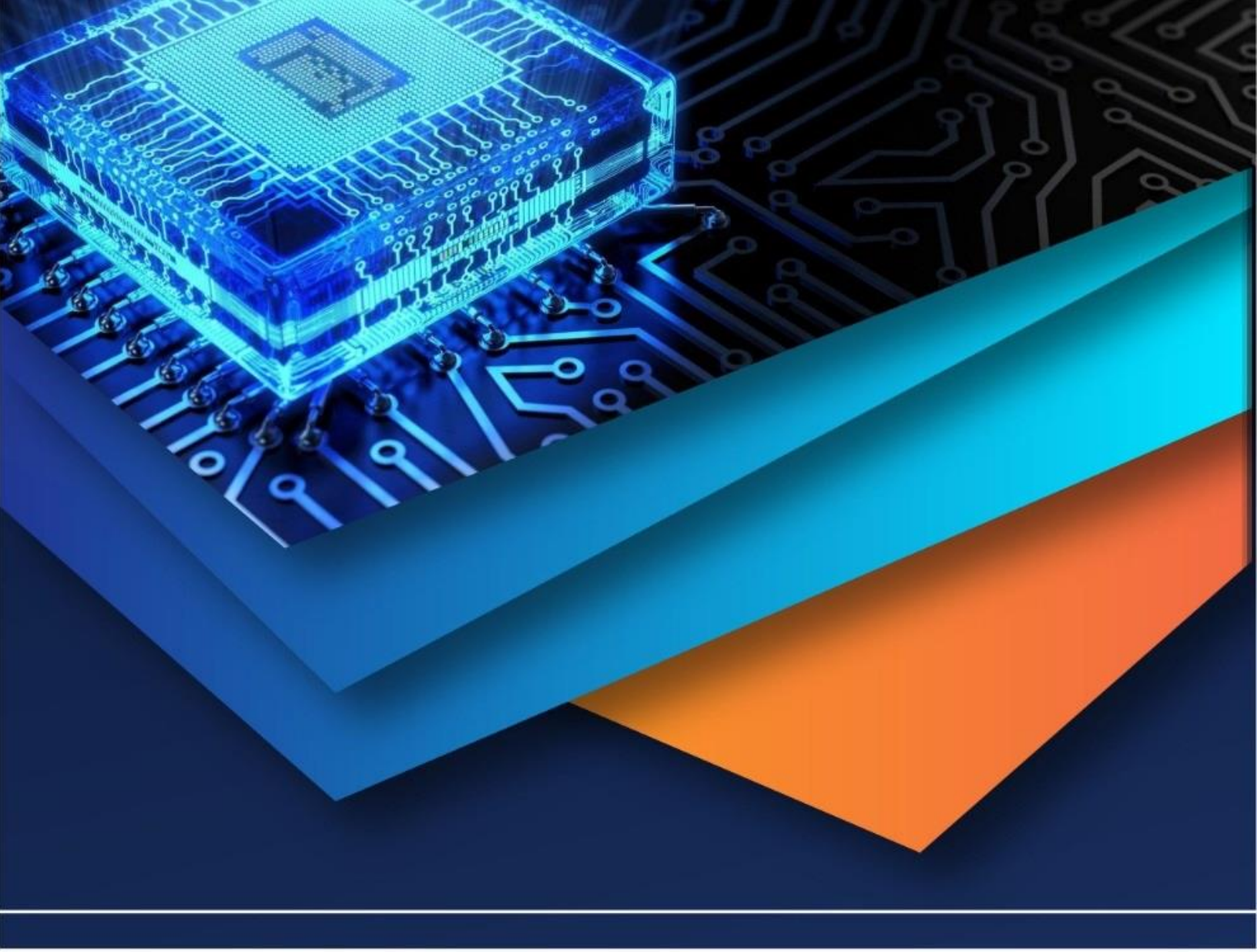
- A computer can store far more information than a human.
- A computer does not forget or make silly mistakes.
- Data can be kept up to date.
- The expert system is available 24 hours a day and will never retire.
- The system can be used at a distance over a network.
- Human experts do not need to be physically present to accomplish a specialized project or task.
- An expert system can include the knowledge of many experts in one specific field.

Expert systems are designed to be ‘expert’ only in a very narrow and specific task or subject field. They contain the acquired expert knowledge and try to imitate the expert’s evaluation processes to offer a conclusion. Experts systems usually contain two components, a knowledge base and an inference engine program, enabling it to suggest conclusions. The knowledge base is programmed in an if....then logical structure. Such a structure is a series of if conditions that, if met, then a specific result may be found.

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