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## THE ENTERPRISE RESOURCE PLANNING SYSTEMS: CONCEPT, CHARACTERISTICS, CONFIGURATION

Mehmet Atasayan

Suleyman Demirel University

### Андатпа

Бұл мақалада заманауи Кәсіпорын Ресурстарын Жоспарлау (КРЖ) болмысы жан-жақты талданып, кәсіпорынның финанс, операциондық және маңызды процестерін басқару үшін қолданатын жүйелердің де жалпы сипаттамалары қарастырылған.

Кәсіптің сәтті алға өрлеуі үшін тапсырыстар мен бүкіл келесі кадамды дұрыс жоспарлау керек. Компания ұлғайған сайын бүкіл бизнес процестерін қадағалап отырудың қиындайтыны даусыз. Компания өсіп дамиды, бірақ қадағалау жүйелерінің кейде кенже қалып қоятыны бар. Көп үлкен компаниялар бизнес процес тиімділігін арттыру, шығынды азайту, жабдықтаудағы оптимизация, дер кезіндегі финанстық әзірлеме мен сапа және жөндеу жұмыстарын қадағалауда туындайтын қиындықтарды тиімді түрде шешуде аса қажеттілік танытады. Осы қиындықтарды шешудің ең тиімді жолы КРЖ жүйесі болып табылады.

**Кілт сөздер:** Кәсіпорын Ресурстарын Жоспарлау жүйелері, ақпараттық технология, модульдер.

### Резюме

В данной статье анализируется концепция современных систем Планирования Ресурсов Предприятия (ПРП), а также общие характеристики систем, которые используются для управления операционных, финансовых и других не менее важных процессов в предприятии.

Для успешного развития бизнеса необходимо эффективно организовывать заказы и все последующие процессы. Чем крупнее компания, тем труднее становится отслеживать все бизнес-процессы. Компании растут и развиваются, но методы контроля не успевают за ритмом. Многие крупные компании имеют неотложные задачи по повышению эффективности бизнес-процессов, снижения затрат, оптимизации снабжения, обеспечению своевременного управления и финансовой отчетности, контроля качества и ремонта. Общим решением этих задач является установка ПРП системы.

**Ключевые слова:** системы Планирования Ресурсов Предприятия, информационные технологии, модули.

**Abstract.** This paper analyzes the concept of modern Enterprise Resource Planning (ERP) Systems and their characteristics, which is used for managing operational, financial and other processes in enterprises. Successful business development managers increasingly need to organize the order and all processes after it. The larger the company, the harder it becomes to keep track of all business processes. Companies grow and develop, but the methods of control do not have time for their development. Many large companies have urgent task of improving the efficiency of business processes, reducing costs, optimizing the supply, providing timely management and financial reporting, quality control, and repair. Common practice for solving such problems is to install an

*ERP system. The study tries to propose a list of ERP system's basic functions and modules, architecture and ERP system configuration with existing features and usability, as well as advantages and disadvantages of using ERP systems.*

**Introduction.** In the age of globalization, organizations all over the world are giving more significance to strategy and planning to get an edge in the competition. With the arrival on the market of new IT solutions, we are increasingly moving away from paper. Successful business development managers increasingly need to organize the order. The larger the company, the harder it becomes to keep track of all business processes. Companies grow and develop, but the methods of control do not have time for their development. Many large companies have urgent task of improving the efficiency of business processes, reducing costs, optimizing the supply, providing timely management and financial reporting, quality control, and repair. Common practice for solving such problems is to install an ERP system. It's hard to say what should be the scope of the company to begin to consider the need for ERP system. It all depends on the number and complexity of the operations of business - processes. It also depends on how much information to be processed and kept in operational availability.

**Defining the concept of an ERP system.** Companies, public or private, whether in the manufacturing or the service sector have always been searching for the total solution. Today, the entire enterprise must be managed within a global and tightly integrated solution. This expanded functionality can be called Enterprise Resource Planning [1]. The concept of Enterprise Resource Planning (ERP) may be viewed from various points of view. First of all, ERP is a product of computer software, second, it may be seen as a tool of mapping all processes and information of an organization, and create an integrative structure [2]. Klaus defines ERP as: "All-inclusive packaged software solutions which seek to integrate the complete range of business processes and functions in order to present a holistic view of the business from a single information and IT architecture" [3].

ERP promises "seamless integration of all information flowing through a company" [4]. In addition, system uses a single central database that enables the various departments within the organization to effectively share information and communicate with each other [5]. The single database approach means common access to a single set of data. Therefore, all departments access the same information and thereby the need for redundant data is eliminated. Moreover, data quality is improved. Before ERP, companies maintained and processed multiple versions of data leading to poor data quality and poor decision support. The ERP system works substantially at integrating all business knowledge functions. It allows organizations to manage their resources effectively. System merges both IT and business processes in a single integrated solution. So, Aladwani reports that the ERP system is an integrated set of programs that provides support for all needed activities in

organization [6]. Blasis claims that an ERP system is an instrument that inculcates a solution for finance, human resources, logistics and etc. It arranges a closer relation to partners also [7].

What is clear in these definitions is that the issue of integration is central to ERP. An ERP has the potential to integrate all processes and functions of a company, and to present an all-inclusive picture of the whole organization. In concordance with Gupta, the ERP system's advantages and disadvantages are listed below:

*Advantages:* Ease of use, Integration of all functions, Online communication between customers and suppliers, Customization, Improvement of decision-making and availability of timely information, Improved process time, Internet interface, Reduction of inaccuracies.

*Disadvantages:* Organizational resistance to change, Costly and time-consuming maintenance, Data errors, which can get throughout the system. Changeover [8].

**The characteristics of an ERP system.** Considerable characteristics of an ERP system –are covering all data resources and business functions, database, packaged software and built-in industry practice with open architecture. He also states that ERP enables minimization of system development time, standardization of workflow and flexibility with an efficient business planning ability. Therefore, ERP is characterized by the aspects of classification of exchange with information and sharing it. This must further maintain some key characteristics and features to score as true business process solution. Features are:

- *Flexibility.* ERP system should be flexible, because it has to respond to the changing needs or requirements of an organization. ERP's "Client/Server technology" enables ERP systems to move across different database servers through open connectivity to database.
- *Comprehensiveness.* ERP system is able to support a variety of organizational functions and it is suitable for a wide range of business organizations.
- *Modularity and openness.* ERP system should have open system architecture, because any module can be disconnected anytime, sometimes it is required without affecting other modules of system. System should also support multiple hardware platforms.
- *Work beyond the organization.* Good ERP system is not constrained to the organizational edges, but may support online connections to other business entities outside the organization or a firm.
- *Simulation of reality.* An ERP system can simulate real processes of the business on the device.
- *Multiple environments are required.* In ERP system most businesses should manage multiple environments in order to achieve requirements at given time [9].

**The modules of an ERP system.** A typical ERP system may combine inventory data with financial, sales and human data, allowing organizations to achieve many work activities like pricing products, producing financial statements and managing human, material and financial resources effectively [10]. This means that the ERP system is integrate and enterprise-wide which automates core corporate activities. It helps organizations to replace the present IS's which are not integrated to an integrated system.

ERP systems commonly include some of the most popular functions in each module, and names and quantity of modules provided by different software vendors may vary. A typical system integrates all its functions by allowing modules to transfer and share data freely, centralizing data in a single database accessible by all modules of the system. The model of an ERP system includes areas such as:

- Finance (organization control, financial accounting, treasury management and asset management).
- Human resources (personnel management, training and development).
- Logistics (production planning and plant maintenance, project systems, quality management, sales, distribution).
- Workflow (integrates the whole organization with assignment of tasks and responsibilities to positions, jobs, locations, groups and individuals).
- Material requirement planning and business planning,
- Sales and Marketing,
- Resource flow management,
- Documentation,
- Manufacturing and maintenance.
- Engineering data control.

**ERP system package.** Totally there are about hundred ERP providers all over the world. For example, SAP-AG, PeopleSoft , Oracle, JD Edwards. All of them have a few common features and properties and they all are based on a central database, which is built on client/server architecture, and consists of various functional modules as pointed out above. The most important attributes of an ERP system is system's ability to:

- Integrate business process flows across organizational functions and its locations;
- Enable the implementation of all types of best business practices with increasing productivity;
- Share data across the whole organization to reduce errors and inconsistencies;
- Produce and access data in a real-time mode to facilitate rapid decisions and cost minimization.

All ERP system packages need to be customized and parameterized to suit the needs of individual organizations. However, the system packages touch many

aspects of a firm's internal and external operations. Thus, successful use of ERP systems is critical to organizational performance and survival [11].

**ERP software configuration.** ERP system should be hierarchically configured at four levels in an organization:

- **Organization level.** There are four types of organization (single - financial/single-operation, single-financial/multi-operations, multi-financials/single-operation, and multi-financials/multi-operation).
- **System level.** At this level, business units such as logistics, operational and financials are implemented as modules.
- **Business process level.** This involves the focus on the customization of user profiles and business processes.
- **Customization level.** This level includes modifications and some extensions to ERP system's application [12].

**Information architecture at ERP systems.** There are three accepted ways to construct ERP information architecture:

- **Centralized architecture.** It refers to an organization that has achieved high levels of standardization of data and populace of business processes.
- **Distributed architecture.** It refers to the organization that has a heavy history of self-governing business units.
- **Hybrid architecture.** It refers to the organizations that wish to rank their global supply chains, and localize their products [13].

**Conclusion.** From above definitions and characteristics, it can be derived that an ERP system can be considered as an integrated software package which uses a modular structure to support a wide spectrum of key managerial and operational areas of enterprise. System provides a backbone to the organization, which allows the absorption of basic cost and revenue related works in business processes.

ERP system is the information conduit system in the organization; it allows the organization to run internal data efficiently, so that the information may be used for decision inside the organization. ERP is an integrated collection of application software modules, which provides managerial, strategic and operational information for organizations and companies to improve quality, competitiveness and productivity.

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