



# IMPLEMENTATION OF THE ERP SYSTEM IN LARGE COMPANIES IN ORDER TO INCREASE PRODUCTIVITY

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## ABSTRACT

Nowadays, high-tech development, which has a positive impact on existing business processes by automating and optimizing them, thus accelerating the execution of business processes and making them more flexible depending on the policy of an individual organization, more organizations see the need to implement an ERP system to increase their productivity and remain competitive in the market. This article describes facts, researches and conclusions based on publications by foreign specialists. This article describes the advantages of using an ERP system, supported by examples of successful implementation of large companies, as well as the problems that organizations usually face when implementing the system and employees when switching from a traditional way of working to using ERP. Despite the difficulties and problems faced by organizations in implementing the ERP system, the successful implementation of the project gives users such advantages as fast collection of up-to-date information, quick decision-making, improved customer interaction and improved product quality.

**KEYWORDS:** ERP system, integration, implementation, implementation, performance, users, management, specialists, customers

## INTRODUCTION

ERP is an integrated, customizable, software system that processes most enterprise system requirements in all functional areas, such as accounting, human resources, finance, sales, marketing and manufacturing. The ERP system allows to create an integrated information environment to automate the planning, accounting, control and analysis of all major business operations of the enterprise. They are mainly used by large companies, which include a wide range of functions and whose enterprises are located in different geographical locations. Since planning and control of internal resources is carried out efficiently and productively, ERP gives an advantage among competitors in the market.

ERP systems are based on the principle of creating a single data storage containing all corporate business information: planned and financial information, production data, HR data, etc. The presence of a single corporate repository allows you to easily transfer data between departments and employees of the enterprise, as well as ensures simultaneous availability of information for any number of employees of the enterprise with appropriate authority. A single corporate storage reduces the cost of information flow between individual units of the enterprise and eliminates the difficulties that may arise if necessary, to share up-to-date and reliable data with the relevant units of the enterprise. This will help reduce the time spent collecting data and avoid duplication of data. With



up-to-date and correct information, ERP will help managers make decisions quickly and correctly, as well as improve communication between business process participants. That's why ERP is called a cross-functional system because it combines business processes from different areas of the organization into one system, which contributes to quick decision-making.

### **A BRIEF HISTORY OF ERP**

The ERP system began its development in the 1960s, when the ROP (Reorder Point System) was developed, which is used for production planning and control. Later, in the late 1960s, the predecessor of ERP - MRP (Material Requirements Planning) was developed, which was used to plan complex production processes, and was suitable for implementing a target market strategy thanks to integration between forecasting, basic production planning, procurement and shop control. In the 1980s, an improved version of MRP (MRP II) was introduced, which optimized production processes by synchronizing materials with production requirements. MRP II systems have combined financial accounting and management systems, as well as production and material flow management systems. Despite this, the MRP II system had its drawbacks (for example, a lack of order control, production plans, etc.) that prompted the development of a fully integrated solution - ERP. ERP was an improved version of MRP II, which also included relational database management, a graphical user interface, and a client-server architecture. This allowed companies, for example, to set product prices and immediately prepare a financial report. ERP systems were in increasing demand in the market, as in a highly competitive, constantly changing business environment this helped companies make the right decisions on time thanks to the integration and optimization of business processes. The current ERP systems are more integrated systems. They integrate the production process with the supply chain process throughout the organization - they control processes from the delivery stage, then at the production stage and ending at the consumer.

### **EXAMPLES OF SUCCESSFUL IMPLEMENTATION OF ERP**

As mentioned above, the basis of ERP is the integration of business processes into a single system. The lack of a single control platform led to stagnation in the work, which negatively affected the profitability of the organization. For example, one of the world's largest manufacturers of Boeing aircraft, space and military equipment, whose production depends on hundreds of external and internal

suppliers of millions of components necessary for the design of airplanes. In order to control the assembly of components into appropriate airplanes consistently and correctly, Boeing used the 400 systems they developed, but all these systems were not combined into a single platform, which caused the data to be different in individual systems, and the assembly processes were not synchronized. This caused the components to be delivered late, which slowed down the production of airplanes. In 1997, Boeing faced unprecedented demand for its aircraft, prompting them to implement an ERP system.

ERP systems also improve communication and data exchange between enterprise members, which significantly increases the productivity and speed of business processes. An up-of-firming example is the American multinational company Cisco Systems. After the implementation of the ERP system, Cisco Systems became a leader in the global network industry, by using electronic communication to build interactive relationships with its customers, business partners, suppliers and employees. As a result, the company doubled every year and earned hundreds of millions of dollars through savings and increased revenues. Another example is the world's largest software vendor, Autodesk.

### **RESEARCH CONDUCTED AMONG LARGE OIL AND GAS COMPANIES**

ERP implementation will affect different industries differently, but in the oil and gas industry ERP occupies a special place in the standardization of business processes. Therefore, a study was conducted that demonstrated how the introduction of ERP affected the productivity of oil and gas plants. The study consisted of comparing performance indicators (which will be given below) between enterprises that have implemented ERP and have not implemented ERP, and how these indicators have changed over the course of 15 years.

Since the oil and gas industry has many departments that perform different functions and geographically scattered enterprises, as well as complex supply chain requirements, standardization of business processes becomes one of the main ways to solve the above difficulties, as well as gives a competitive advantage and flexibility, which allows enterprises to enter a new market. Due to ERP systems, managers have access to up-to-date information about external events and internal resources, which will allow managers to make the right and optimal solutions.

As mentioned above, a comparison was made between oil and gas plants for 5 performance indicators, namely:

- Profitability ratio - the ratio of sales income to its expenses for a certain period of time;



- Productivity coefficient is a measure of business process efficiency that compares the actual use of resources with the standard cost indicator based on best practices or averages in the industry;
- Capacity utilization rate - efficiency of capacity utilization of enterprise resources;
- Product mix ratio is to improve the efficiency of the distribution of the company's resources by focusing resources on more profitable products;
- Price recovery coefficient - the company's efficiency is to maximize the prices of manufactured products while minimizing resource prices;

A total of 66 oil and gas companies were investigated, of which 29 implemented SAP ERP, 7 implemented other ERPs (not SAP) and 30 did not implement ERP. The results of the study showed that the productivity of enterprises that used SAP ERP improved compared to enterprises that did not use SAP ERP.

Performance indicators of companies that used SAP ERP relative to companies that did not use SAP ERP	After implementation
Profitability ratio	0.096
Productivity coefficient	0.043
Capacity utilization rate	0.078
Product mix ratio	0.003
Price recovery coefficient	0.051

**Table 1: Performance Indicators**

The profitability ratio is 9.6% higher for companies that have implemented SAP ERP. This is due to the fact that the data proceed at all stages of production, from exploration of the field to production and supply of consumers with products to more general requirements in business. You can also notice an increase in the productivity coefficient by 4.3%, as ERP creates a continuous production process: from raw materials to finished products. Improved capacity utilization (7.8%) can be explained by the fact that ERP allows enterprises to identify changes in demand and take the necessary action in response, thus achieving efficient use of capacity.

This study is useful because it studies a certain industry and shows the impact of ERP on the productivity of enterprises in this industry, as it is known that the impact will be different on different industries, for example, comparing the profitability rate of the firm's sales in the oil and gas industry and the consulting company would be useless because of obvious industry differences. The results show that ERP has a positive impact on performance and capacity utilization, which is the reason for increased profitability.

### **PROBLEMS ENCOUNTERED IN IMPLEMENTING ERP**

Although the results of using ERP give many significant advantages, the implementation of ERP is laborious, expensive and time-consuming process, and also changes traditional workflows. There are cases when companies failed because of the above difficulties or some mistakes that companies usually make, and their attempt to

implement ERP was a failure. To avoid this and successfully solve the problems encountered during and after the implementation of ERP, each project participant, namely, an ERP consultant, internal auditor and IT staff, must be familiar with the company's business processes, knew the roles assigned to them and professionally performed their duties. Managers, after analyzing the organization's vision and corporate goals, must be able to address issues related to the integration of the system into the company, for example, can management make efforts to re-engineer business processes to achieve impressive results, can the use of ERP improve the competitive position of the organization, or whether the organization will be able to financially cope with expensive ERP implementation, etc. Auditors, in turn, help the organization lay the foundation for success, as they have knowledge about internal control methods, regulatory requirements and business processes.

As mentioned above, the implementation of ERP entails a reorganization of the business processes of the enterprise, in accordance with best practices, so that it fits the ERP model. Although the changes are tailored to the best practices of the industry, the ERP system can be flexibly customized to certain requirements of an individual company, but it should be taken into account that the price of such implementation will be higher. One of the most difficult problems facing the company when implementing the system is preparing staff for the new system. This problem becomes especially more difficult if employees resist the introduction of a new system and modified workflows, giving preference to traditional and habitual ways of working.



Studies conducted to determine the success factors of ERP implementation found that involving users in the planning and installation process is one of the most important factors. Thus, during the implementation of the system, most attention is paid to technical problems, such as direct installation in a short time using limited resources, companies may neglect the human factor, which can cause failure. It is important that users participate in the implementation of ERP, because it is users who can determine the requirements for the system within their specialty, since they are the ones who are familiar with all the subtleties of business processes and the field of knowledge in their functional units, thus creating a positive attitude to ERP that meets the needs of users. In addition, during the planning and installation of the ERP system, it is important to involve the best employees in the project for the successful implementation of the system, who are well aware of the needs of the company and help move the project in the right direction. A poor understanding of the project and an inability to lead the project correctly is also one of the main reasons for the failures to implement ERP.

As you know, the cost of implementing the system is high, and this is one of the reasons why most companies using ERP are large because they can afford an expensive project. As mentioned earlier, the more the system is tailored to the needs of the company, the higher the implementation price. In addition, financial resources are invested in staff training to teach them how to use and maintain the system, as well as in bonus and preferential programs, social packages, salary increases, trainings and courses to retain trained specialists. But it should be noted that the use of ERP has a beneficial effect on the retention of employees, as advanced technologies give them the opportunity to work in a convenient format, in accordance with modern business process requirements.

ERP implementation is a time-consuming process. ERP can be implemented gradually - modularly, that is, there is no need to install the entire system at once. The duration of its implementation depends on the number of modules to be installed, the degree of configuration for the needs of the company, the number of interfaces (i.e. interactions) with other programs.

## CONCLUSION

ERP brings many advantages to companies among competitors, thanks to the integration of individual functional units of the organization into a single platform that each user will have access to within the provided access levels. The introduction of ERP is a huge, time-consuming, expensive process that requires careful planning and professional performance of the duties of each project participant.

ERP is not just a program with built-in functionality, it is a whole system that is customized for certain needs of the company and changes the way we do business. The main factors contributing to the successful implementation of the system are competent management, as implementation can attract significant changes in the practice of doing business processes and requires large capital investments; as well as the participation of highly qualified users of the system in the implementation process, as they are well acquainted with individual business processes of the company; and after installing the system, which will meet the requirements of users, The implementation process itself is a complex and long process, and even a successful installation does not mean the success of implementation, as the system should still be effectively used by the company's employees. Due to the above shortcomings, some organizations fail, but if these errors are avoided, the system is properly designed and integrated, ERP will increase the company's productivity and profitability.

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