Strategies for Modern Integrated International Management

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The implementation of modern IT solutions in enterprises to improve the management is a prerequisite for the success of all companies in the era of globalization. The example of this type of technology are modern integrated strategies for IT management class of material requirements planning (MRP II) and enterprise resource planning (ERP). This article presents the possibilities of using the above strategies employed in Polish enterprises.

Keywords: management, strategy for integrated management, globalization, internationalization.

1. INTRODUCTION

In the era of globalization, strategies of modern integrated management are becoming increasingly popular in international logistics. They find their application in service, distribution and various companies which focus on production. These include the modular systems connecting different logistic functions: production, sales, purchasing and inventory management. An integrated information system is usually used to support the activities of enterprises management using Material Requirements Planning (MRP) and Enterprise Resource Planning (ERP). In the article entitled: "Development assistance systems management" M. Orzylowski defined integrated systems in the following way [1]: "Integrated systems that provide management support are divided into several classes. Preceded by MRP class systems, which began to emerge in the mid-twentieth century. MRP (Material Requirements Planning) - the expansion of this class of systems involves taking into account feedback, defining the status of the production process, led to the creation of systems of closed-loop MRP. The next step was the creation of MRP II, which are already included in the integrated systems. The abbreviation is derived from the term Material Resource Planning, defined in 1989 by APICS, the American Production and Inventory Control Society. Compared with MRP systems of this class they have been extended by the elements associated with the sale and support decision-making levels of strategic business management. Currently, we introduced Enterprise Resource Planning which constitutes a development of MRP II financial procedures, accounting and management accounting. The term ERP was introduced by the Gartner Group in 1998. This standard has not been formally defined and is sometimes referred to as MRP III (Money Resource Planning-Finance Resource Planning) and MRP Plus. This article will discuss the integrated MRP II / ERP production management strategy. The main research problem is to determine which tools, methods and techniques are used to coordinate operational complexity and improve it in manufacturing companies, as well as to define the determinants of the process of improving operational activity in manufacturing companies.

2. MATERIAL REQUIREMENTS PLANNING

The genesis of ERP systems are tools for planning, scheduling production and for accounting / financial reporting. Comprehensive ERP packages on a larger scale appeared in the 1980s (the origins of SAP, 1972). Their development can be located in the following chronology (roughly decade) of computer-aided production organization:

- 60s - support of selected functions, e.g. sales statistics,
- 70s - support of departments (groups of functions), support for process organization, ERP modules,
- 90s -enterprise network integration, e.g. EDI subsystems, CRM, e-commerce,
- XX - century, network economy e.g. distributed web services,

The ERP system is the basic software package used by organizations to coordinate information across all management areas that support business process management using a common database and reporting tools [4]. In addition, the ERP system enables the modelling of the management system, allows tracking of added value and analyzes the financial implications of potential decisions [3]. ERP systems were introduced in the 1990s in four areas [4]: marketing and sales, supply chain management, accounting and finance, and human resources management. Functional areas of the ERP system [4] are:

- Marketing and sales functions,
- Product marketing,
- Customer service support,
- Customer support,
- Customer relationship management,
- Sales forecast,
- Supply chain management,
- Supplies Materials management,
- Production,
- Transport,
- Maintenance,
- Plant Accounting and Finance,
- Financial Accounting,
- Allocation and Cost Control Planning,
- Human Resource Management Recruitment,
- Human Resource Management,
- Payroll Training,

The basis of the ERP system is the financial management subsystem (accounting and finance) that software providers have extended to include logistic management methods. The biggest breakthrough in the design of management support strategies was noted at the beginning of the 1960s. Its immediate consequence was the introduction of MRP class systems. These systems were the first to combine several interrelated functions of enterprises, although they still covered a relatively small area of their business [3]. MRP is used to manage demand-side stocks, i.e. where demand is entirely dependent on the output of particular goods. This is related to the manufacturing process. The MRP procedure consists of three elements: material list, back planning and material list breakdown. The planning uses a production plan that can create the need for materials for the production of the product. An exact production plan is essential to the system in order to plan the delivery of raw materials and materials for the time when they need to be produced. Thanks to such planning costs, profitability and time are optimized. The essence of MRP II systems is that the entire production cycle is strictly described: from material orders, through all phases of production to the sale of finished goods. On this basis, you can accurately determine the material needs for production, and also get a lot of analytical information necessary for economic management. In 1989 APICS defined and published the MRP II standard, extended to the MRP method for elements related to the sales process and supporting decision-making at strategic management levels.

In the official description called. “The "MRP II Standard System" 16 functions are defined as follows:

- Sales and operation planning,
- Demand management,
- Master production scheduling,
- Material requirements planning,
- Bill of material subsystem,
- Inventory transaction system,
- Scheduled receipt subsystem,
- Shop floor control,
- Capacity requirement planning,
- Input/output control,
- Purchasing,
- Distribution resources planning,
- Tooling planning and control,
- Financial planning interface,
- Simulations,
- Performance measurement,

All these functions appear to be the basis of an integrated management strategy related to material needs planning.

3. ENTERPRISE RESOURCE PLANNING

The ERP strategy is a continuation of the MRP II and MRP methodologies and has been created by successively adding modules to it - hence the name is often called MRP III (Money Resource Planning). Enterprise Resource Planning (ERP) is primarily intended for manufacturing companies and includes all production and distribution processes, integrates the various areas of business operations, streamlines critical flow of information, and provides instant response to shifts in demand. In the online ERP strategy information is updated in real time and available at the time of decision making. For several years, ERP strategies had a colossal impact on the functioning of many companies. Patterns and standards of organizational management methods have been developed and have become a part of the information infrastructure serving the part of the business process. It is these ERP strategies that contributed to a major way out from the IT crisis of the 1980s, with a very small number of successful IT projects. This was possible thanks to the numerous benefits of the ERP strategy [5]. Below the key advantages of ERP systems [6] are presented:

1. Transformation of an organization into an information-based enterprise. Information has become one of the core business resources. ERP systems use information to create orders and various reports, as well as to cover operational needs of an enterprise. What is more, ERP systems allow multiple uses of information and their interoperability.
2. Figuration of the integrated nature of the business. ERP class systems cover the entire enterprise and integrate its individual areas. These systems help to solve and optimize discrepancies across departments.
3. Perception of the organization as a global enterprise in times of increasing competition and globalization, companies are expanding into foreign markets. ERP systems integrate all areas of the enterprise, thereby significantly improving the efficiency of the operations. They align the needs of the different departments within the organization; enable planning, management, control, and control in very diverse businesses.
4. Modelling of Company oriented for processes. Contemporary companies must enable rapid circulation and assimilation of information and control of economic processes in external relations (customers, contractors, etc.) as well as internal (e.g. employees).
5. Provide real time work. ERP class systems allow direct data entry to the system for a specific business operation and instant updates and information entries to enterprise-wide master and transaction records.
6. Upgrading an IT strategy to a business strategy. ERP systems are an important tool for creating an effective business. They have a significant impact on streamlining many operating processes and the entire business. These systems also help to solve problems and build competitive advantage of the company. That is why the implementation of ERP systems in the enterprise has grown to a strategy.
7. Introduction of a new model of computer systems implementation. ERP class systems allow you to tailor a particular model to your business needs by appropriately selecting modules. This enabled a very rapid implementation of such a system, which perfectly meets customer requirements.
8. Generally accessible user-oriented environment. In ERP systems, much of the staff is directly related to operations, so it should be easily accessible to the end user.
9. Representing an advanced approach to increasing productivity. ERP systems combine MRP II - production resource planning and many other advanced methods to increase organizational productivity, including: TQM, JIT, benchmarking, business process reengineering, and lean production.

The benefits of deploying enterprise resource planning systems include: improving customer service levels, reducing order processing time, increasing delivery on time, reducing inventory, stockpiling work in progress, stockpiling of inventories, stockpiling, cost reduction, shorter reaction time to changes in the company environment and greater flexibility.

The advantages of ERP systems are efficiency and effectiveness according to accuracy and reliability of data - high sensitivity to erroneous data and lack of built-in mechanism of continuous improvement. The leader in the market of integrated information systems ERP in Poland and in the world is an international joint stock company SAP, which manages the production of enterprise management systems. A list of the most important

business processes offered the SAP ERP system is shown in Table 1.

Table 1. Business processes in SAP system [7].

Management area	Main business processes
Human capital management	Personnel Management Managing employee transactions Managing relationships with employees
Logistics management	Personnel Management Inventory management and warehouse management Production management Sales and distribution management
Finance management	Personnel Management Inventory management and warehouse management Production management Sales and distribution management

4. THE RESULTS OF SURVEY CONDUCTED IN POLISH COMPANIES CONCERNING ERP – ENTERPRISE RESOURCE PLANNING

Figures 1, 2, 3 present the results of a survey conducted in the form of a poll of ten companies located in Poland. The subject of the survey was Enterprise Resource Planning and the impact of its implementation on the organization. Figure 1 shows the benefits of deploying integrated ERP systems in ten companies located in Poland.

Research related to the implementation of the ERP system demonstrates the achievement of improved quality, consistency of data in the systems, and the use of modern value-added reports for strategic decision-making by executives. Another significant benefit of implementing an ERP system is the streamlined flow of information. This allows companies to retain more manageability, which is crucial for maintaining competitiveness and even survival in the marketplace.

As many as 70% of surveyed companies (whose logistics managers were questioned) declare that the cost of implementing the above mentioned strategy exceeded the budget planned. Survey results show diversity in response to a question. This indicates a different level of real cost awareness at the beginning of the project implementation and an unforeseen extension of the scope of the implemented strategy. This is confirmed by direct talks conducted with senior managers, they argue that during the implementation of the ERP strategy, changes were made to the scope of implementation and the need for additional IT / SC support for implementation and management. The main reason for decisions

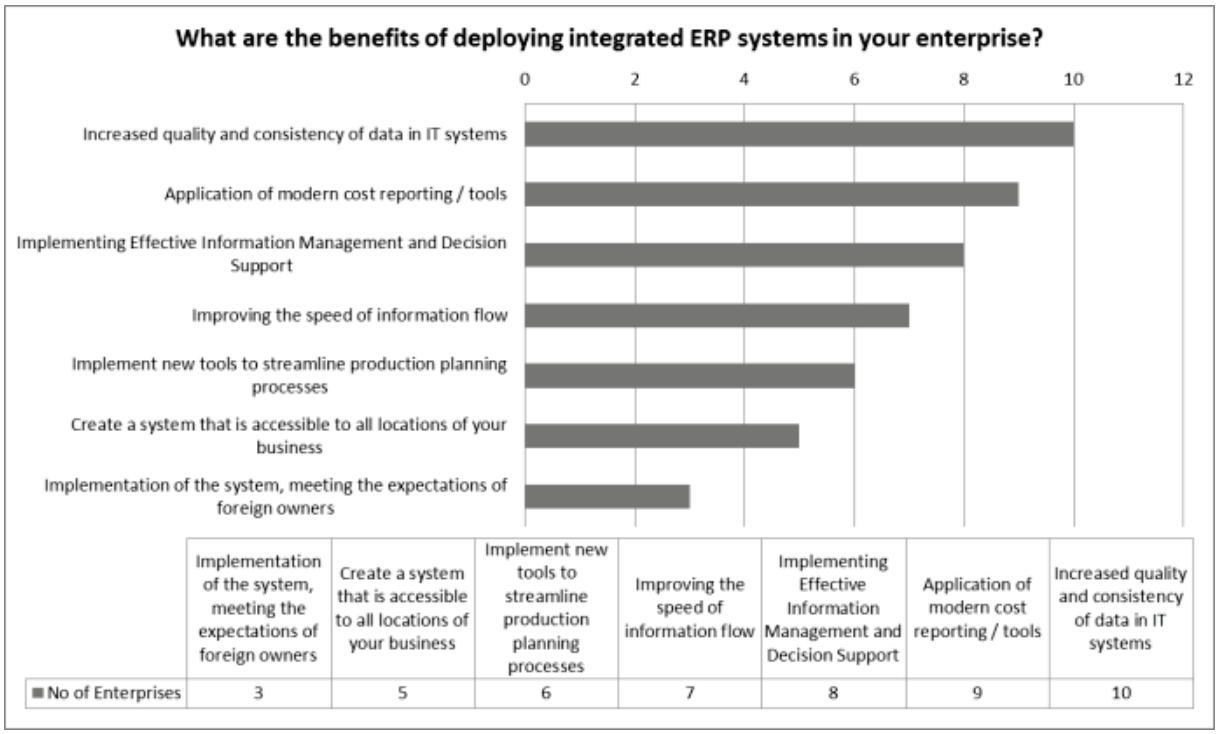

Fig. 1. Benefits achieved related to introducing integrated ERP systems.
Source: Own study.

taken by companies implementing the integrated system was poor quality and performance of the existing systems. An additional aspect was the lack of adequate cost control reports and lack of information supporting decisions. Figure 2 shows the real costs involved in the implementation of integrated ERP systems in ten companies located in Poland.

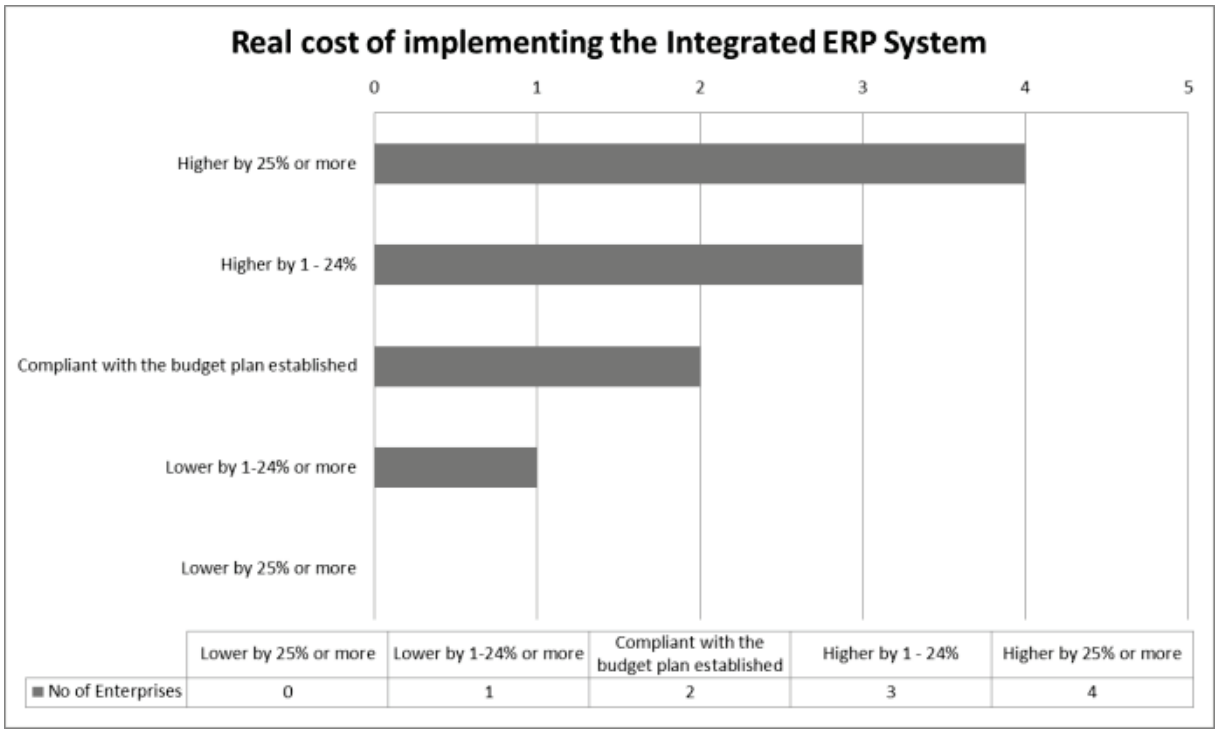

Fig. 2. Real costs related to introducing integrated strategy of administering enterprise's resources. Source: Own study.

Implementing an ERP strategy is a great investment involving significant business resources and employees from all organizational units. The ratio of the planned and real cost of the investment is directly related to the implementation time itself. Another survey question addressed to managers aimed at analyzing the estimated time to implement the system against the design stage. None of the companies failed to implement the ERP strategy in accordance with the assumed design framework. During the discussions with the Company's Management, there were answers about the scope of the project, changes within the organization and staff changes. The study found that 80% of the surveyed companies exceeded the estimated time to implement an integrated ERP system. 60% of the surveyed companies exceeded the assumed time at the design stage by as much as 25%, which translated directly into the implementation costs incurred. Figure 3 shows the real time of implementation of integrated ERP systems in ten surveyed companies located in Poland.

Other reviews of the ERP strategy were also collected during the survey. The negative opinions include among others: too little performance of the new system, increased execution time, problems with the implementation of the system to work. The above remarks are showing flaws in implementation process of the system, such as: insufficient staff training, inadequately selected set of equipment, which delayed the time of the user's task.

5. SUMMARY

Implementing an integrated management strategy is a milestone in every business. Business research shows that enterprises indicate higher quality, use of modern value-added reports for strategic decision-makers. In addition, streamlining the flow of information helps to preserve greater business flexibility, which often determines competitiveness and even survival in the marketplace.

The article discusses the topic of integrated management related to efficient planning of all the resources of the manufacturing company. ERP systems are the successor of MRP II systems and are a full complement of functions for ERP systems using the available technologies.

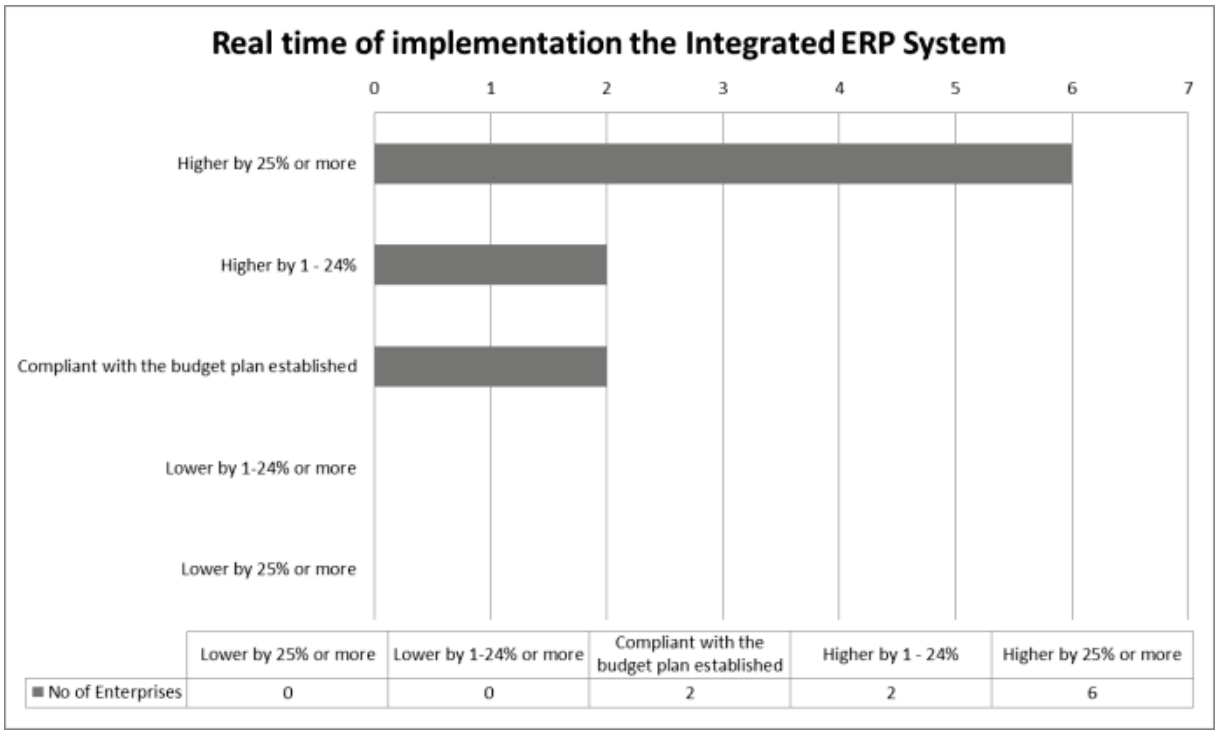

Fig. 3. Real time of implementation of the Integrated ERP System.
Source: Own study.

Moreover, the article presented the survey based on the results of ten Polish companies - the cost of investing in implementation of the ERP strategy. It has been proven that the implementation costs of the ERP system significantly exceeded the assumed investment budgets and caused an unforeseen extension of the scope of the deployed system. Survey results also indicate the need for additional IT / SC support for the implementation of the above mentioned strategy. It is worth noting that none of the companies succeeded in implementing the ERP strategy in line with the projected design framework.

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