Functioning of shoe production facilities based on automated control systems

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Abstract. This article discusses the application of automated control systems in production. The review of existing management systems in the domestic market in various areas and directions is carried out. The advantages and disadvantages of popular control systems are also analyzed. The dynamics of the impact of the use of automated systems on the activities of enterprises from the point of view of management and economics is estimated. The result of this study is a conclusion about the necessity and inevitability of industrial automation.

1 Introduction

Automation of shoe production is a prerequisite for increasing the efficiency of the production process. Automated process control systems at the shoe factory cover every process from material preparation and product production to storage and sale of finished products. Automation allows you to quickly solve problems related to modeling and manufacturing shoes: design development, decoration, selection of materials, and others. In addition, the automated system allows you to monitor the progress of the production process and manage technological operations.

2 The most used corporate systems in Russia

The choice of system is largely influenced by the adaptation of the system to Russian realities. Russian manufacturers initially develop corporate information systems based on the specifics of Russian production. Those foreign manufacturers that were able to adapt their information systems also have a high weight on the Russian market. However, it should be understood that just translating a program into another language does not always fully adapt the program to work in another country. For example, in most Western versions of corporate information systems, there are no such concepts as "debit" and "credit", but for implementation in a Russian company or production, the presence of these functions is necessary.

In the Russian market, among domestic and foreign manufacturers, such systems as SAP, Oracle, Microsoft, 1C, Parus and Galaktika play an important role (Table 1).

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Table 1. Corporate information systems on the Russian market.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Product</th>
<th>Country of manufacture</th>
<th>Tasks solved</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP SE</td>
<td>SAP ERP</td>
<td>USA</td>
<td>This system is designed for large geographically distributed enterprises with a complex internal structure.</td>
</tr>
<tr>
<td></td>
<td>SAP Business One</td>
<td>USA</td>
<td>This product is intended for companies engaged in trade, service and simple assembly production with up to 250 employees.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>USA</td>
<td>The system provides full functionality required for implementing self-service information services and analytics.</td>
</tr>
<tr>
<td>Oracle</td>
<td>E-Business Suite</td>
<td>USA</td>
<td>This complex of integrated business applications provides effective management of all aspects of the company's activities: finance, production, human resources, procurement, logistics, marketing, sales, service, supplier and customer relations.</td>
</tr>
<tr>
<td></td>
<td>ERP Cloud</td>
<td>USA</td>
<td></td>
</tr>
<tr>
<td>Microsoft</td>
<td>Microsoft Dynamics ERP</td>
<td>USA</td>
<td>Small, medium, or large enterprise resource planning software used to manage the entire organization, from supply chain, purchasing, and human resources management to finance and collaboration projects.</td>
</tr>
<tr>
<td></td>
<td>Microsoft Dynamics NAV</td>
<td>USA</td>
<td>Development for small and medium-sized businesses.</td>
</tr>
<tr>
<td></td>
<td>Microsoft Dynamics AX</td>
<td>USA</td>
<td>A business solution for global companies that support industry and operational business processes and need full ERP functionality for financial and human resources management.</td>
</tr>
<tr>
<td>1C</td>
<td>1S: Enterprise</td>
<td>Russia</td>
<td>This system solves the following tasks: sales, inventory and purchasing management; customer relations management (CRM); pricing; operational resource planning; cash and settlement management; simplified production.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>USA</td>
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</tr>
</tbody>
</table>

$ Main tasks solved by the system: Automated project management, automation and planning of customer service, automated sales management, advanced reporting functions.
Parus Corporation

Parus (Management system PARUS went from a company that wrote a salary calculation program for a small organization to a manufacturer of a comprehensive enterprise management system. Currently, PARUS Corporation offers its customers 17 multi-level software products.)

Russia

This system solves automation tasks in the enterprise both in the administrative, industrial, and economic spheres of activity.

Galaktika Corporation

Galaktika ERP (A tool for solving current and strategic management tasks of a modern enterprise. There are several configurations for different levels and areas of activity.)

Russia

This system solves the tasks of planning and managing finances, human capital, production, projects, supply chains, supplier relationships, assets, repairs, customer relationships, and others.

SAP was founded in 1972 by five former IBM employees (Klaus Chira, Dietmar Hopp and Hasso Plattner, Klaus Wellenreuther, Hans-Werner Hector) from the company's German office in Weinheim. The name SAP was compiled based on the first letters of the full name: "Systems, Applications and Products in Data Processing". The company's first office was located in Mannheim, Germany. SAP R/3 is a generic name for an integrated automated management system, which the main product is sold by SAP. SAP system R/3 consists of a set of application modules that support various business processes of the company and are integrated with each other in real time.

Key features of the SAP system:

1. A comprehensive management system that can cover all business processes and areas of activity of a modern enterprise;
2. An integrated system where all data is stored in a single information database;
3. A system that works in real time and is thus able to provide reliable information in the right form at the right time.

Implementing SAP R/3 is an investment in improving your business with a quick return on investment. Based on a study conducted among companies using the SAP solution, the following average indicators of the implementation effect were obtained, shown in the diagram (Figure 1).
Let's take a closer look at Oracle Corporation and its products.

Oracle's history began in the legendary Silicon Valley, California, USA. In 1977, a young computer programmer named Larry Ellison dropped out of Yale University to start his own business. Larry Ellison, who then had only $1,200 at his disposal, persuaded Bob Miner and Ed Oates, his former colleagues, to start their own company. Before that, all three of them developed a project called Oracle on behalf of the CIA.

Among the products that Oracle offers:
- **DBMS** - Oracle Database
- Applications, including cloud-based ones (for enterprise resource planning, supply chain management, enterprise performance management, human capital, etc.)
- Operating Systems (Oracle Solaris, Oracle Linux)
- Middleware (Oracle Fusion Middleware platform)
- Turnkey systems (Oracle Exadata Database Machine, Exalogic Elastic Cloud and Oracle SuperCluster)
- Oracle data storage systems
- Servers
- Network and information center products
- Corporate communications facilities
- Virtualization solutions
- Java and others.

As it was possible to understand before, each company uses different technologies in different products of its enterprise. Similarly, Oracle Corporation uses different technologies for different projects.

In total, the Oracle enterprise released about 300 products; however, the largest number of projects was performed using Oracle E-Business (OEBS), based on EAM and ERP technology.

Let's consider separately the corporate information system "Oracle Applications". It includes 55 integrated software modules that represent functional solutions in the field of financial, human resources, production, sales and logistics management. Today, more than 7,700 organizations and companies in 79 countries of the world are customers of Oracle enterprise applications.

Known implementations at Magnitogorsk Iron and Steel Works, JSC AvtoVAZ and JSC Krasnoyarskenergo. The system is fully implemented in the Internet architecture and in many respects has no analogues in the corporate systems market.

The Oracle Applications package can be divided into several functional groups.

Thus, the Oracle Applications system significantly increases the internal manageability.
of the enterprise, its flexibility and resistance to external influences, increases the efficiency and competitiveness of the enterprise, provides reliable information about the activities of all divisions of the enterprise, and, ultimately, increases the profitability of the business.

In the global market, SAP, Oracle and Microsoft are the main competitors in the field of information technology and systems. So let’s look at Microsoft and its products.

Microsoft develops and releases a wide range of software products. The largest software manufacturer, Microsoft, whose main products are operating systems and office applications, in 2006 created the Microsoft Dynamics structure, which united all Microsoft Business Solutions brands.

Microsoft Dynamics ERP is a small, medium, or large enterprise resource planning software used to manage the entire organization, from supply chain, purchasing, and human resources management to finance and collaboration projects.

Microsoft Dynamics ERP includes two solutions: Microsoft Dynamics NAV (developed by the Danish company Navision Software A/S) for small and medium-sized businesses and Microsoft Dynamics AX (formerly Microsoft Axapta) - a business solution for global companies that support industry and operational business processes and need full ERP functionality for management finance and human resources.

The Danish company Navision Software A/S, which was purchased by Microsoft in the summer of 2002, developed Microsoft Dynamics NAV. Microsoft Dynamics NAV is an integrated integrated enterprise management system (ERP) for medium and small businesses (from 5 to 50 users).

The developer of the Axapta solution, from which Microsoft Dynamics AX “grew”, was the Danish company Damgaard Data A/S. The first version of the system was released in March 1998 in Denmark and the United States. The name Axapta changed to Dynamics AX in 2004, after Microsoft acquired the developers of the system. Microsoft Dynamics AX (formerly Microsoft Axapta) is an ERP-class enterprise resource management system for medium and large - sized companies with more than 10,000 employees.

Based on the data, we can conclude that the systems we are considering are used for the implementation of various projects much more than others.

Let’s now consider the systems presented by domestic developers, and let’s start with the 1C system. The 1C system was originally created as an accounting automation system for accounting and is used as such in a large number of enterprises. The system developed, expanded its functionality, and improved the technologies used. Today, 1C has many partners in Russia and abroad.

Now for complex automation of the enterprises 1C offers, in particular, the 1C: Corporation system. This system is designed for effective enterprise management. The company has also developed various specialized solutions that can be combined with each other, depending on the purpose of purchasing and implementing corporate information systems in the enterprise.

The 1C: Enterprise 8 platform provided by 1C is a frequently used system. One of the factors that allow us to gain such popularity among consumers is the composition and functionality of this platform.

The Parus information system from the corporation of the same name is also popular on the Russian market, so we will also consider it in more detail.

Parus Corporation is one of the largest Russian developers of information systems for public administration and business. The company has been working in the domestic IT industry since 1990. The corporation creates ERP-class solutions: with their help, you can automate any processes in the field of financial and economic activities, R & D and production management.

Parus Corporation provides a variety of software products to choose from. Among them, there are two large groups: solutions for public administration and solutions for the defense industry and business.
Parus users include such federal executive authorities as the Ministry of Energy of the Russian Federation, the Ministry of Health of the Russian Federation, the Ministry of Culture of the Russian Federation, the Investigative Committee of the Russian Federation, the Supreme Arbitration Court of the Russian Federation, the Ministry of Justice of the Russian Federation, the Central Election Commission of the Russian Federation, and many other agencies. Integrated systems Enterprise management systems have been implemented in OJSC Euroceme, OJSC SUEK, OJSC Surgutneftegaz, and others. Let's finish considering Russian corporate information systems based on the products of Galaktika Corporation. Galaktika ERP is a flexible and modern tool for solving current and strategic management tasks of a modern enterprise in the digital economy.

The Galaktika system allows you to solve more than 10 different enterprise management tasks. The system helps to manage various processes in the enterprise.

3 Conclusion

If the enterprise implements the corporate information system correctly, following all the necessary instructions, then the effect of implementation will be noticeable quite noticeably. On the official website of the Galaktika Corporation, the dynamics were presented, from which it can be concluded that this corporate information system has a positive impact on the activities of enterprises.

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