

TRENDS OF DEVELOPMENT OF ERP SYSTEMS IN THE RUSSIAN COMPANIES

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Abstract

Now the relevance of introduction and development of ERP systems increases in the Russian companies in connection with continuous development of information systems and technologies. Application of ERP systems considerably increases quality of company management, simplifies control over a stream of works between divisions, reduces the expenses connected with duplication of information and tasks, reduces the expenses arising because of work of separate control systems.

In paper modern practice of application of ERP systems by the Russian companies will be analysed: the review of the solutions of ERP systems existing in the Russian market is carried out, platforms are considered popular, by the number of decisions, functional components of foreign and Russian ERP systems are revealed.

Now there were following trends of the Russian market of ERP systems: import substitution and transition to cloudy decisions. The first trend continues the development in the political and financial reasons. The second is more likely reflection of a universal trend applicable to all IT market.

Key words: Enterprise resource planning, competitiveness, management, information system

JEL Code: O14, O32

Introduction

In modern conditions the factor of time is a source of companies' competitive advantages and a source of their competitiveness (Gorokhova, Šafránková & Sekerin, 2015). Realization of the competitive strategy based on saving of time focuses the companies to minimize time expenditure in all the business processes (Byun, Sung, & Park, 2017), (Symeonidou, Bruneel, & Autio, 2017).

The perspective direction of optimization of temporary parameters of the companies' activity is application of ERP systems. Enterprise resource planning allow to create the system and organizational strategy of association of various directions of production and management

of it (Šikýř & Šafránková, 2016). Now the relevance of introduction of ERP systems increases in the Russian companies in connection with continuous development of information systems and technologies. In modern understanding ERP system (Enterprise Resource Planning) represents the integrated information management system the company.

Functioning of ERP systems is based on use of uniform model of a transaction system, applicable to all business processes of the organization (Boyko, Sekerin & Šafránková, 2014). These systems can be used in the conditions of any level of functional and territorial dissociation of business processes, it allows to integrate information on all economic operations into the general information database (Carayannis & Grigoroudis, 2014). Advantages of ERP systems – a possibility of their replication and reengineering of business processes of the company; modularity of introduction; universality (Onetti, Zucchella, Jones, McDougall-Covin, 2012), (Zhang & Yang, 2013).

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1 Analysis of the technologies used at the Russian industrial enterprises

Now it is possible to allocate the following problems of innovative development of the Russian industry: lack of the national concept of industrial development, low level of innovations and technologies, a set of gaps in the critical chains of interaction providing creation of new Russian innovative brands, the insufficient level of development patent legislation in the Russian and practice concerning intellectual property items, continuously exhausted personnel potential of science and production, raw dependence of the Russian economy, insufficiency of information and network support of innovative activity, there is no experience of advance and implementation of innovative activity at all levels, there is no aiming at market result during creation of innovative zones in a format of business incubators, science and technology parks and other infrastructure institutes, weak diversification of industrial production, the industries prevailing in technological structure low technological ways, high degree of wear of the fixed business assets and low rates of their updating and also low capacity utilization rate (Marx, Gans & Hsu, 2014).

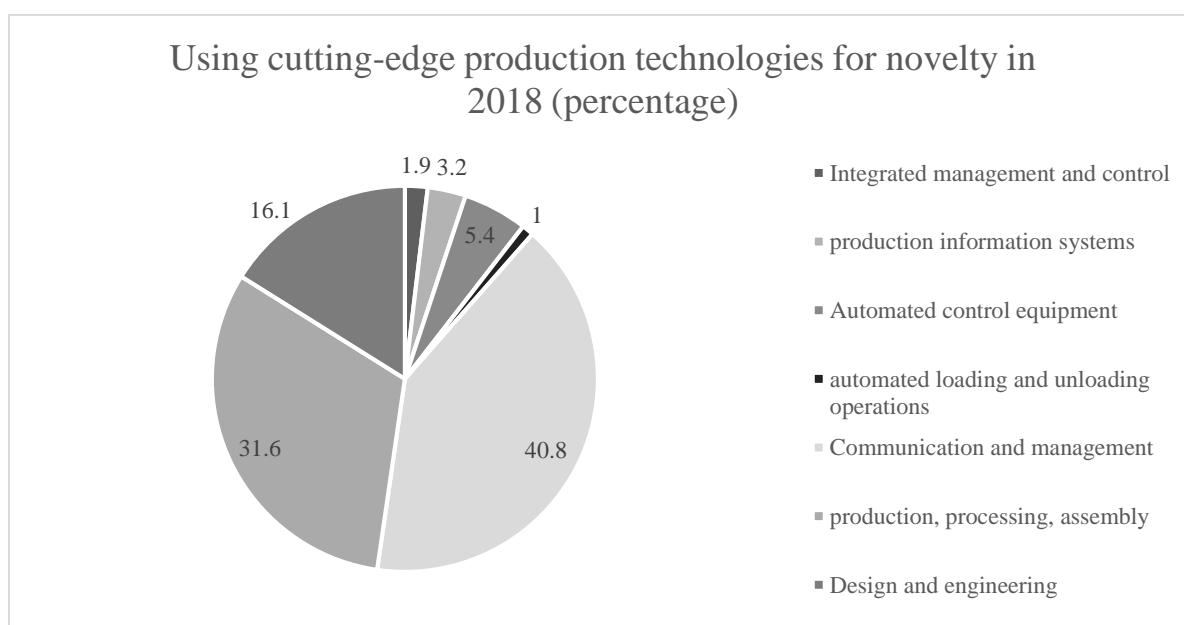
Nevertheless, today in the Russian Federation there were prerequisites of significant reorientation of priorities of the state, private business and civil society on activization of

innovative activity, increase in a role of science. The success of practical use of new technologies in practical activities of the Russian industrial enterprises is defined by the potential which is available for them, including innovative.

The companies of the Russian industry introduce low-capital-intensive innovations and innovative solutions: mainly this improvement of quality of goods, works, services (40.4% of total number of the interviewed organizations), expansion of the range of goods, works, services (37.5%), preservation of traditional sales markets (36.4%), expansion of sales markets (25%)¹.

In figure 1 the structure of use of advanced technologies at the Russian industrial enterprises in 2018 for novelty degree is shown.

Fig. 1: Use of advanced technologies in the Russian industry on degree of novelty



Source: Author's analysis on a basis (Science. Technologies. Innovations: 2020)

This source contains the key indicators characterizing the scientific and innovative capacity of Russia, materials of Rosstat, Ministry of science and the higher education of Russia, OECD, UNESCO, and also a research of the Higher school of economy (Russia) are used.

Figure 1 demonstrate that the advanced production technologies at the Russian industrial enterprises are used mainly in the following spheres: communication and management (40.8%); production, processing, assembly (31.6%); design and engineering (16.1%). While such important spheres as production information systems, the integrated management and control, including hardware are almost not captured by the advanced production technologies. However,

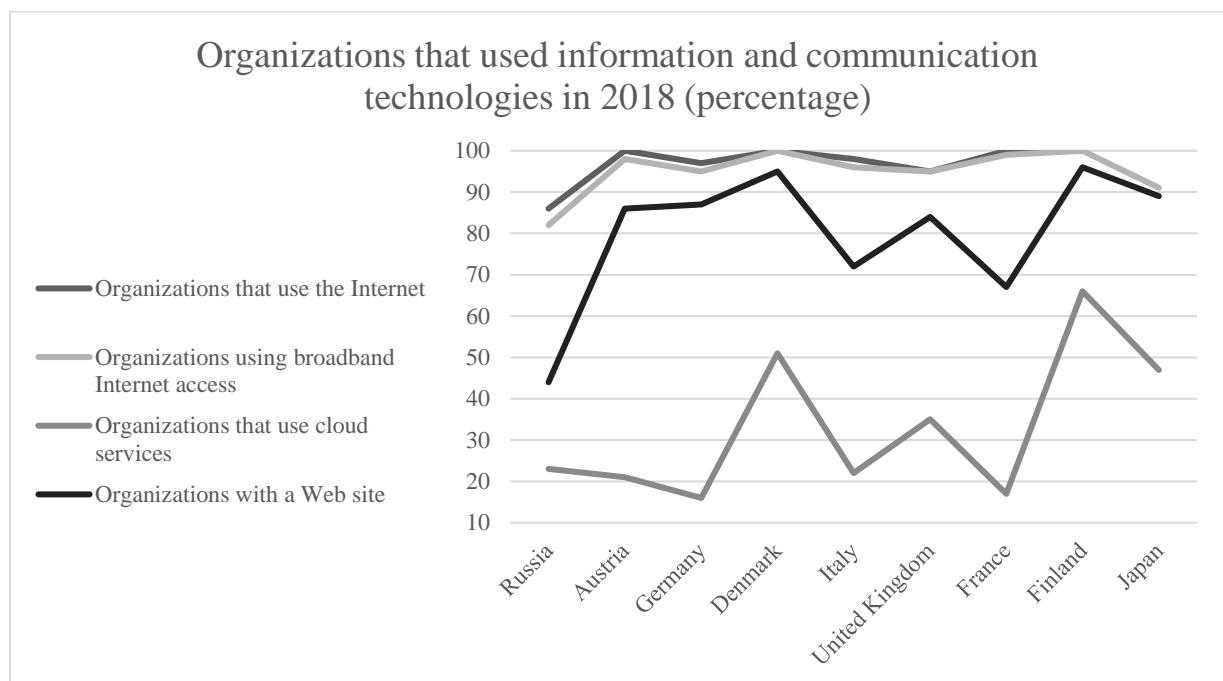
¹ Source of statistical information of a research: (Science. Technologies. Innovations, 2020).

in modern conditions growth of interest of the industrial enterprises in a problem of application of logistic concepts of management and to introduction of modern production information systems is observed (first of all ERP-, the Customer Relationship Management System).

Now technologies which are new to their application in the Russia are developed mainly; the share of essentially new technologies is insignificant. It is a consequence of the fact that long time the Russian economy was focused on production and sale of natural resources that became the cause of technological lag of the Russian industry.

In modern conditions there is a digital transformation of all economy. Digital technologies are developed in a large number in various fields of activity of the person and widely take root into his practical activities. In essence digital technologies are a basis of new technological way. From that, how fast economic subjects will seize them, their efficiency depends already in the near future. In figure 2 use level in 2018 of information and communication technologies in the Russian and foreign organizations is shown.

Fig. 2: Use of information and communication technologies in the organizations of the different countries



Source: Author's analysis on a basis (Science. Technologies. Innovations: 2020)

From this drawing it is visible that in the explored countries practically in all organizations the Internet is used, at the same time there is a broadband access to it. Most the organizations were developed and actively use the Websites. And here the level of application

of cloud services has the wide amplitude of application: from 67% in the organizations of Finland up to 44% - in the Russian organizations.

In general figure 2 shows lag of the Russian organizations after use of modern information and communication technologies from the organizations of all other explored countries: Austria, Germany, Denmark, Italy, Great Britain, France, Finland, Japan.

2 Modern practice of application of ERP systems by the Russian companies

During 2016 - 2018 in the Russian industrial organizations the steady trend of expansion of practical application of all types of information and communication technologies was created: Use of e-mail, Information search in networks, Implementation of bank and other financial transactions, Vocational training of personnel, Carrying out videoconferences, Internal or external hiring of personnel, Telephone negotiations through Internet / VoIP, the Subscription to access to electronic databases, electronic libraries on a paid basis.

At the Russian industrial enterprises in 2018 cloud services were used in the following directions: for access to the software provided by provider of a cloud service (13.1%); for placement of own software (4.1%); for placement of databases, storage of files (13.3%); for use of e-mail (19.7%).

In 2018 in comparison with 2017 the index of digitalization of business in Russia from 28% increased to 31%. In 2018 the maximum value of the index of digitalization of business is recorded in Finland – 50%, high values of this index in Japan (48%), in the Scandinavian countries – 43% - 48%, in Germany – 39%, in Italy – 37%, in Great Britain – 37%.

In the Russian industry in 2018 66.6% of the organizations used software for financial calculations in electronic form; 64% - for the solution of organizational, administrative and economic tasks; 27.7% - for providing access to databases through global information networks.

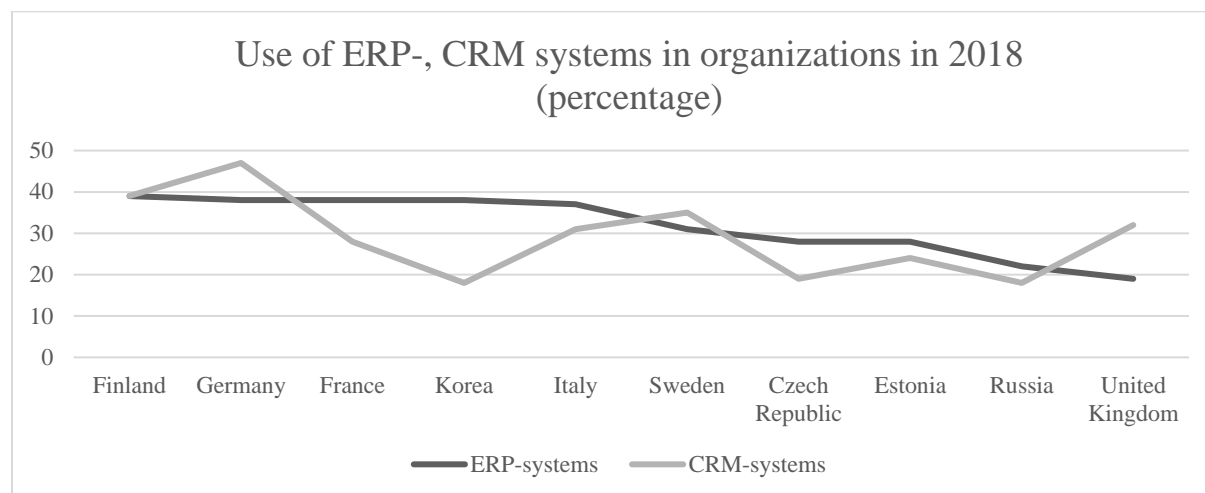
In 2018 27.6% of the Russian industrial organizations applied Enterprise resource planning; 17.3% - applied the Customer Relationship Management System, 6.7% - used SCM systems.

In figure 3 application of the advanced production systems in the industry of various countries is shown. The Russian industry lags behind leaders (Germany and Finland) on the level of application of ERP systems and CRM systems.

In 2018 the Russian industrial enterprises applied the following means of information protection: regularly updated antivirus software (82.8%), means of the digital signature

(82.5%), program, the hardware interfering unauthorized access of malicious applications (67.1%), spam filters (59.3%), means of enciphering (50.3%), systems of detection of invasion into the computer or in network (44.8%), software of process automation of the analysis and control of security of computer systems (32.8%).

Fig. 3: Use of the advanced production systems in the industry of various countries in 2018



Source: Author's analysis on a basis (Science. Technologies. Innovations: 2020)

Now the Russian companies use the following domestic and foreign systems which can be carried to ERP systems: R/3 (SAP AG manufacturing), Oracle Applications (Oracle), Baan IV (Baan), iRenaissance (ROSS Systems), SyteLine (SYMIX), Axapta (Damgaard Data Int), MFG/PRO (QAD), "PARUS" (PARUS Corporation), "Galaxy" (Galaktika Corporation), "BOSS Corporation" (IT Corporation), "1C:ERP+ Project Management" (1C Company).

SAP — the undisputed leader on sales volumes of the software of this class in Russia. The company holds about 40% of all Russian market of ERP systems. R/3 system belongs to the class of the large integrated systems and incorporates modules which significantly expand a framework of traditional Enterprise resource planning.

3 Trends of the Russian market of ERP systems

In 2016-2019 there were following trends of the Russian market of ERP systems: import substitution and transition to cloudy decisions. The first trend continues the development in the political and financial reasons. The second is more likely reflection of a universal trend applicable to all IT market.

The vector on import substitution is shown that the companies introduce and use the Russian ERP. Increase in demand for the Russian solutions of a similar class is noted grows and it is noticed by many participants of the market. Such products as Mirapolis, "Galaxy", 1C gain steam recently and attract new clients to the products, competing with western to analogs. Increase in number of the introduced decisions 1C at automation of the big companies and the largest holdings is noted. The state, first of all, defines import substitution process: the public sector and the companies with the state participation apply the Russian ERP.

In the course of import substitution all participants seek to minimize risks of emergence of excessive expenses on replacement of the existing IT infrastructure and losses of productivity of ERP systems as a result of IT reorganization which probability is high in lack of a wide choice the import independent of DBMS of level of Oracle. Now "Parus" provides preservation of productivity of the systems on PostgreSQL comparable to their productivity on Oracle, and simplicity of transition of clients to this DBMS.

As well as around the world, ERP in Russia moves from possession model to model of consumption of services (cloud services). With growth of need for ERP from medium business private clouds gave way hybrid, and then – SaaS-models. Further BaaS (business as a service) or, in other words, outsourcing of the whole functional areas of type of accounting, calculation of salary, logistic function follows.

The problem of process automation of production management and introduction of the ERP systems capable to coordinate production operations with resources of the enterprise is relevant for the Russian companies and to provide growth of indicators of efficiency.

The Russian industry still lags behind on automation level banks and a telecom, but already significantly reduces a gap with the leading industries.

One more trend is an integration of ERP into "smart" devices and the Industry 4.0. The enterprises began a thicket to be interested in integration of ERP into "smart" devices: IoT sensors, wearable electronics and mobile devices of employees, including mobile and sales staff.

Conclusion

Thus, in paper it is proved that now the relevance of introduction and development of ERP systems increases in the Russian companies in connection with continuous development of information systems and technologies.

Application of ERP systems considerably increases quality of company management, simplifies control over a stream of works between divisions, reduces the expenses connected

with duplication of information and tasks, reduces the expenses arising because of work of separate control systems.

In paper modern practice of application of ERP systems by the Russian companies is analysed; it is shown that the Russian developers have a reserve in creation of platforms, to the Russian developers easier and quicker to adapt the decisions for business processes and for the regulatory legal base of the companies users. The possibility of use of the Russian products instead of import is realistic, but introduction in the industry and large business, process of transition can take rather big period of time.

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