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On the Issue of Interaction Between Business and ICT in Contemporary Society

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Abstract ICT are dramatically changing people's lives. Industrial processes are becoming more and more intellectual, with their growing efficiency. ICT constant development and appearance of new functions are driving large-scale economic changes. Under the influence of Information Communication Technologies, relations between government, companies, and people are significantly transforming. However, practices show that ICT, having influence on economic growth and sustainable development, appear to have certain drawbacks. It is extremely important to note that their positive and negative characteristics are not only economic, but social and ecological. To maximize positive effects and neutralize drawbacks, ICT should be managed by government, businesses and societies together. The ICT market growing quickly, ICT use is expanding in businesses, public administration, and social developments. Along with these ongoing processes, there are studies which are being developed at both the national and region levels in Russia. This paper describes the mutual influence between businesses and ICT in Russia. This paper aims at considering the main trends and major consequences of these interactions, as well as how to study them. It does so from theoretical researches in this area as well as domestic and international practices.

Keywords Business • Information and communication technologies • Knowledge economy • Innovation • Indicator systems

1 Introduction

In Russia today, using Information and Communication Technologies (ICT) is a key driver of business efficiency and key factor in improving organizational performance and increasing competitiveness. Their successful integration into the information structure of the enterprise, improves the quality of goods and services,

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enhances customer satisfaction, increases productivity, saves cost of labor and on materials, etc. ICT is an important aspect of scientific and technological development. These technologies include computers and their parts, software and numerous information services, including communications and data transfer. Information communication technologies can reduce operating costs and increase profitability. Influenced by information technologies the activities of the company's basic departments (marketing, sales, and finance) are changing. The Information Society has become one of the dominant paradigms of post-industrial society. According to the currently prevailing conception—the information society development is characterized by a number of peculiarities, among which the most important are such as increasing the role of information and knowledge in society, the creation of a global information space, the development of the knowledge economy and innovative approaches to the use of modern ICTs.

In fact, industrial and management processes are becoming more and more intellectual, with their growing efficiency. The majority of Russian executives believe that information communication technologies are playing a dominant role in the use of innovative business models and strategic goals realization. This is due to the more efficient accumulation and analysis information. ICT can govern the ability of companies to generate the sustainable business models. The role of ICT is that using a unique combination of information processes and technologies can implement business transformation to a new model that realizes the company's business goals on a new technological level. It also should be note that the constant need for more hardware and software capabilities has played a significant role in ICT. Computer technologies are continuously developing on a large scale and more quickly than in other industries, as they are complex, require further research and development. Moreover, the area of problems is almost limitless, which always proves the necessity to use ICT. Deploying new technologies aims to strengthen links between research and practice, theoretical and empirical work, in order to establish affordable, always-on and high-speed connectivity, but most importantly, to reshape the way individuals live, work and interact (Fratu et al. 2016).

2 Systems of Indicators for ICT Evaluation, Analysis, and Comparison

With the information society developing, knowledge economy evolving, interactive technologies entering various spheres of human activities—from mobile communications to e-government, it is necessary to assess quantitatively and qualitatively development and dynamics of these processes. The idea to create a comprehensive system of indicators to measure ICT development in different countries, and to develop a methodology to apply such system appeared late in the 1990s. By that time, significant experience and methodological potential had been accumulated to weigh certain information society drivers: telephony coverage (landlines and

mobile) of population and businesses; per capita numbers of TV sets, radios and computers, Internet audience dynamics, etc.

The creation of real conditions for the transition to an information society in Russia and the formation of a knowledge economy require the organization and constant conduct of comprehensive analytical research of the informational and technological resources (ITR). ITR—is a set of elements of information and communication technologies, which are acquired, adapted and used in operating activities of organizations, institutions and households (Kazantsev et al. 2007). This research should be based on the principles of a systemic approach, openness and flexibility, consideration of regional differentiations and typology of the characteristics of the region's informational development, compliance with international standards, and facilitation of the opportunity to conduct international, interregional, and inter-organizational comparisons of the level of development of the information society.

Kazantsev et al. (2007) state that it is of principal importance in the research of regional information system development to take into account the dual character of information technology (IT) in the Russian regions: that of a developing sector of the economy (creation and spread of IT) and that of a source of large-scale societal transformation on the basis of its information system development (use of IT in the economy and social sphere). The first aspect suggests the use of data and indicators oriented toward the measurement of production volumes of goods and services from the information technology industry, the development of the IT market. The worldwide understanding of the term *information technology industry* is split into three parts: the manufacture and implementation of IT equipment, the development of software, and the offering of services connected with the use of information technology.

The second aspect reflects the more immediate direction of modern methodological research in the field of information technology. This is connected with the examination of IT as a specific form of resources for an organization and allows for the formation and study of a system of indicators characterizing the results and consequences of the use of IT in various industries of the economy and in the social sphere. In international practice, various national and international institutes offer their approaches and methodology for the evaluation, analysis, and comparison of informational and communications technologies in different countries. Normally, three major indicator systems are mentioned: technical certainty, transparency of communications and information society:

- The system developed by Rodriguez F. and Wilson E. J., *the Technical Certainty Indicator (TCI)*, measures and evaluates the condition of the development of information and communication technology in various countries (Rodriguez and Wilson 2000). It integrated the five most widely spread indicators of the commonly used and most needed products of technology: personal computers, mobile phones, Internet hosts, fax machines and televisions. Through a special statistical technique, they captured the source of variation that those five indicators (variables) had in common. On the one hand, the means of the direct

facilitation of all necessary processing, transfer or presentation of information is examined; on the other hand, the condition of the resources that make these activities possible is considered, with human resources as the first on the list.

- The system proposed by the specialists at the US National Science Foundation, *the Indicator for Transparency of Communications (ITC)*, is designated for the evaluation of the use of information and communications technology in interactions between all categories of population, businesses, entrepreneurs and public agencies, as well as within each particular category (NSF 2000; Shtrik 2002). This system of indicators can also be used to assess a nation's advance towards e-government, so the indicator is sometimes called the "*indicator for transparency of government*".
- *The Informational Society Index (ISI)* was developed and is maintained by the IDC, a global market intelligence and advisory firm in the ICT industries. The index includes a total of 23 variables divided into four groups: computer infrastructure, information infrastructure, Internet infrastructure and social infrastructure. This system researches the condition of global IT and reflects growth rates of activities in the fields of IT creation, dissemination, and use as a whole. The ISI measures nations according to their ability to access and absorb information and information technologies. ISI's major task is to assist government planners in measuring the progress of their nation in relation to others and provides financial investors and IT suppliers with a tool for analyzing opportunities, drivers, and inhibitors.

Each system of indicators evaluates a given aspect of the condition of IT development and its role in the social and economic development of a given country. They are interdependent, and they supplement each other. Out of all the factors determining the development process of information and communications technology, that of equipment is the most important, as the creation of a developed information society, the organization of open, interactive communication, and the development of an electronic economy are, in principle, impossible without the use of modern means that directly facilitate all necessary operations for the processing, transfer or presentation of information.

There are many national and international organizations surveying ICT development in different countries and relevant consequences, assessing "e-readiness" in developed and developing countries, with a wide range of various tools and metrics. Among such initiatives are those by UN (UNDP, UNESCO's Division for Science Analysis and Policies and Institute for Statistics, UNCTAD), International Telecommunication Union (ITU), World Bank, World Economic Forum, OECD, Eurostat, as well as programs sponsored by national agencies, including USAID, DFID (UK) and Sida (Sweden). One of the most comprehensive and constructive approaches to knowledge-based economy measurement was proposed by the World Bank Institute in 2004 within the framework of the Knowledge for Development (K4D) Program. The Knowledge Assessment Methodology (KAM) is an interactive benchmarking tool created to help countries identify the challenges and opportunities they face in making the transition to the knowledge-based economy.

The World Bank, which has created a special structure that is a benchmark in the field, pays special attention to problems of economic growth on the basis of the modern ICT. On the basis of analysis of ICT use experience in developed and a group of undeveloped countries, specific recommendations are created for governments on how IT might effectively complement the growth of the economy and establishment of social stability.

It is important to note that there is no established ICT monitoring and benchmarking system in EU, especially when launching programs and strategies. It is being continuously discussed what indicators should be used to monitor certain directions or components; the list is updated and amended upon reaching an agreement.

All of the international indicators systems mentioned above make it possible to obtain generalized degree assessment of development of the national Information Technological Resources (ITR) and make cross-country comparisons. But obviously, due to the diversity of national statistical systems it is difficult to use them for in-depth study of ITR of the unique Russian regions and to make a comparative analysis. In Russia, a unified statistical surveying methodology for ICT was initiated by the Center for Science Research and Statistics (CSRS, Scientific Research Institute—Federal Research Centre for Projects Evaluation and Consulting Services (CSRS 2015)), when systematizing the terminology of science and innovation statistics, and then preparing a surveying program for IT statistics.

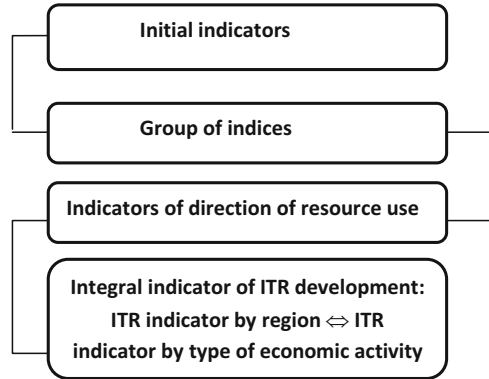
According to Kazantsev et al. (2008), the research on the hierarchical structure of the Russia's national information system, as well as the resource approach to the evaluation and analysis of information technologies in the regions allow the formulation of requirements for the indicator system for the evaluation and analysis of ICT development and use:

- necessity of taking into account the maximum number of factors and conditions influencing the scale and dynamics of the ITR change;
- supporting of the full compatibility and comparability of indicators for various conditions of their use;
- the reducibility of private indicators into integral characteristics common to all objects;
- transparency of the base values for the calculation of indicative characteristics and their accessibility for use in calculations and obtainment of evaluations.

With these requirements in mind, the model for formation of evaluation criteria is presented in Fig. 1 (Kazantsev et al. 2007).

Formed on this model the system of indicators for evaluating the development of information—technological resources allows for different levels of detail to compare, analyze, evaluate the degree of use of information and communication technologies and to obtain the digital gap (digital divide) both between Russian regions, and within each of them—between the individual subjects of the economic activities and organizations. Based on the results of monitoring the proposals for regulation of informatization can be developed. Indicators allow building the ratings of the regions to form homogeneous clusters for which the harmonized

Fig. 1 The model for formation of evaluation criteria of ITR development in Russian regions



methodological rules and procedures for ICT management are applicable. A comparative analysis of the ITR of the regions of Russia with the use integral informational index led to a number of important conclusions (Kazantsev et al. 2008):

- The more economically developed a region is, than the stronger the role of ICT is in it;
- The industrial structure of a region has very significant effect on the level of ICT development and impact on the number of employees in organizations that use ICT;
- The number of organizations that actively use local and global networks, Internet technology, and Internet services is growing rapidly (Fig. 2).

The level of ICT use in Russian regions depends significantly on the economic situation, the level of household income, and the development of human capital. A focused policy of government agencies can play a significant role in readiness for an information society. At the present time, organizations and companies in all manufacturing industries and service spheres understand that acquiring modern computers and advanced software is creating an additional competitive advantage for business, as in this case they are providing themselves with the necessary conditions for conducting their activities in a timely, flexible, and effective manner.

3 The Interaction Between ICT and Business

First of all it is worth noting that ICTs are a business tool and resource that does not eliminate the necessity to develop business skills, talents, and ideas. For competition management information systems, the major issue is not the information technology itself, but a competition formula, its key success factors and its information component. If there is no decision maker able to answer really important questions, if only traditional criteria are used, it can be difficult to create such an information system. ICT also can be considered a combination of products and

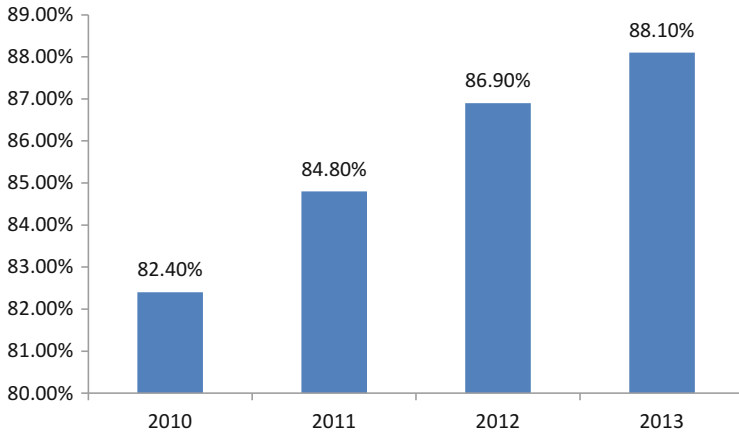


Fig. 2 Internet use in the Russian organizations: from 2010 to 2013. *Source:* RFFSSS, http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/science_and_innovations/it_technology/

services. This point of view includes several aspects: ICT market; investment in ICT; new types of companies; rises and falls in the ICT sector.

According to IDC (International Data Corporation) (2015) and EITO (the European Information Technology Observatory) (2015), the IT market includes computer hardware, office appliances, software and IT services, whereas the telecommunications market comprises of communications services, end-user communications equipment and network communications equipment. Comparing with figures from Western Europe, Russia's IT market has been actively developing. But the growth pace slowed down again—it has been declining for several consecutive years, which worries market analysts. Thus, IT specialists believe the reason for slowdown is a variety of factors influencing the Russian economy in general, rather than in maturing market. Those factors are the decreasing GDP, dependence on money flowing in from oil export, and the absence of new, real incentives for IT development in Russia.

The growing importance of ICT for economic development is clearly demonstrated by the substantial investment that is continuing to flow in IT from businesses, financial sectors, governments and other social and public institutions. Researchers see a stable growth of expenses on ICT in the national GDP structures. The state of investment in ICT R&D is reflected by the constantly growing number of patents.

The fast ICT industry development creates new structures and types of companies to provide cutting-edge ICT infrastructure. This offers their users a full range of services needed to support the infrastructure. New organizational structures unavoidably add to the diversification processes in the economy, which in turn stimulates by creating new opportunities for employment. Among the most remarkable new structures are:

- Special agencies, companies and other structures to implement and manage ICT, e.g., new wireless communications or special software development skills, the issues most often faced by SMEs willing to support their ICT needs. Such specialized agencies supporting specific needs consider those activities as their primary business. Such businesses are knowledge management, Web design, hosting, customer relations management, etc.;
- The markets of mobile telecommunications, fiber optic lines, etc.;
- Outsourcing companies. Practice shows that most often such services are needed to develop customized software. As a rule, today's companies tend to switch from the software quickly developed internally to solve certain users' particular needs, to the resources of application service providers (ASPs) that give them ready-to-use solutions. The majority of such solutions cover logistic chain management and operations support.

The next aspect of relationships between ICT and business is related to consideration the role ICT for business automation and using ICT for business process management. There are different opinions on the role of ICT in business processes. On one hand, information and communications play a key role in the modern business along with financial resources, personnel (team) and production capacity. In a market economy, business is unavoidably bound to risks caused by both uncertainty about the future of the business environment and possibility of executives' erroneous decisions. It is very important for executives to know how to foresee these difficulties and proactively develop strategies to overcome them, i.e. to have action plans for different scenarios. The action plans should be developed by simulating how the information model of the business would interact with environment models—economic, social, political, etc. Success depends on the ability to anticipate prevailing expectations rather than forecast real world changes, as decisions are made based on participants' virtual perceptions of the situation and their colleagues. ICT have a strong impact on efficiency of business systems used within companies. Modern business management software gives such advantages as:

- Increasing internal awareness and improving communications with business partners;
- Speeding up operations and cash flow;
- Improving management processes in logistics, cost and quality;
- Organizing continuous evaluation of various costs, etc.

Some of the Russian enterprises take advantage of information systems based on principals of SOA (service-oriented architecture) as a set of integrated Web-services. It also should be note special techniques used in Russian companies when modeling business processes—Work Flow Modeling and Data Flow Modeling (Ananiev and Serova 2008).

At present in Russia widely used process description standards are IDEF0, IDEF3, and DFD. Introduced in the 1970s by Douglas Ross, the Structured Analysis and Design Technique (SADT) was the basis for the IDEF0 business process

modeling notation future development. Another Work Flow Modeling application is IDEF3 standard for generate process models as job time sequences — the sequences of functions and operations. The DFD (Data Flow Diagramming) notation can be efficient when implementing a process approach to organizational management. It minimizes the subjectivity of business process analysis. Another actively used process description methodology in Russia is UML (Unified Modeling Language). It includes networks of Activity Diagrams that can be used to business processes describing and analyzing, even though business modeling is not what UML's primary objective. According to Serova (2012b) along with the notations and standards listed above, there are others business process description and modeling tools, which are offered by various software developers. It also should be note that nowadays one of the most popular business process management standards is BPEL (Business-Process Execution Language). Some projects of BEPL implementation have been successfully carried out in Russia. These projects have solved IT infrastructure optimization problems.

Development of companies' external information infrastructure and improvement of customer and supplier relations management are growing in importance. In Russia, as well as worldwide Information Communication Technologies became a key element of product or service creating and value proposition. Simultaneously Intellectual Information Technologies are developing rapidly. Obviously, that there are a number of problems and tasks common to all enterprises in spite of unique of their financial and economic activities. These include the material resources management, production, finance management and accounting, logistics, marketing, sales, human resource management, and much more. ERP-systems (Enterprise Resource Planning systems) provide managers with complete and timely information for management decisions and ensure effective data exchange with business partners. These systems support comprehensive management of key aspects of enterprises activities. More and more Russian companies realize their business need in automation of their processes by implementation of contemporary ERP systems and experts forecast the stable growth of Russian ERP market (Serova 2012a) (Fig. 3).

1C is one of the largest Russian Enterprise Information System (EIS) providers. The company's total revenues were estimated at 18.4 billion rubles in 2010. Over 50 % of the company revenues cover the share of its own products. It's targeted towards small to medium business. More than million organizations work with 1C: Enterprise while performing their everyday routines. In Russia 1C: Enterprise is directly competitive with SAP, Microsoft Dynamics, and Oracle. In contrast to them 1C: Enterprise has open price policy, better rapid application development and inexpensive solutions. But we should mention that in comparison with ERP in Western Europe the functionality of the Russian ERP is still much less developed. We can explain it of appreciable differences in economic resource-limited on system development. The other specific of the Russian EIS is that quit often companies prefer to implement its own software products which are developed in their own IT department (Serova 2012a). On the application side, the most frequently implemented ERP modules on the Russian market are financial, logistics

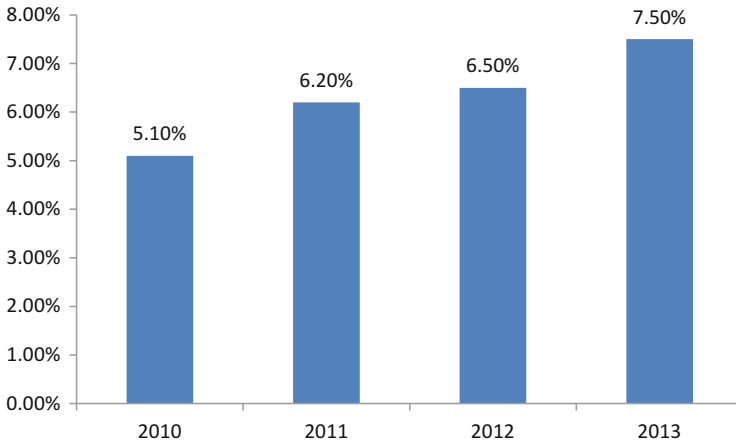


Fig. 3 The share of organizations used ERP systems in Russia from 2010 to 2013. *Source:* RFFSSS, http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/science_and_innovations/it_technology/

and control modules, although CRM (Customer Relationship Management), BI (Business Intelligence) solutions, and EDM (Electronic Document Management) are also becoming very popular (Figs. 4 and 5).

As a resource, ICTs open new opportunities for SMEs. Developed ICT tools create the opportunities to access the global market and large-scale economy that used to belong to large companies only, available to SMEs. Small businesses can access to new consumer markets through the B2C e-commerce development. The B2B e-commerce gives SMEs good opportunities to do business with big companies by using e-procurement technologies or entering the e-marketplace. All this allows small companies with limited resources to access the global market at affordable costs. As the e-economy is developing, it is becoming more and more diversified, and SMEs are taking advantage of ideal opportunities to occupy profitable market niches of certain products and services. SMEs in the past were unable to increase efficiency by developing large-scale operations. Now, ICT management systems are getting more and more affordable for small a business, which allows them to compete with bigger companies. ICT has change the ways companies enter their markets. Thus, ICT can stimulate development of such new business models as e-marketplaces or be used to support customized product supply marketing strategies. An essential feature of ICT is the available opportunities and tools that increase a user's privileges, which in turn requires from companies more responsibility to customers. Thus, the Internet is one of the major factors that have made companies develop Corporate Social Responsibility (CRS) strategies. Following that initiative, many European companies have organized CRS departments to record social and environmental activities along with economic ones. Some researchers believe that the Internet is a base to switch the power balance between companies and consumers towards the latter. The Internet creates new types of

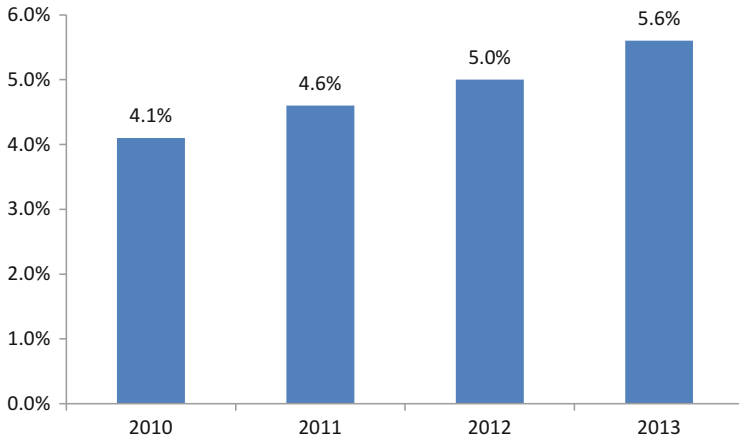


Fig. 4 The share of organizations used CRM systems in Russia from 2010 to 2013. *Source:* RFFSSS, available online http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/science_and_innovations/it_technology/

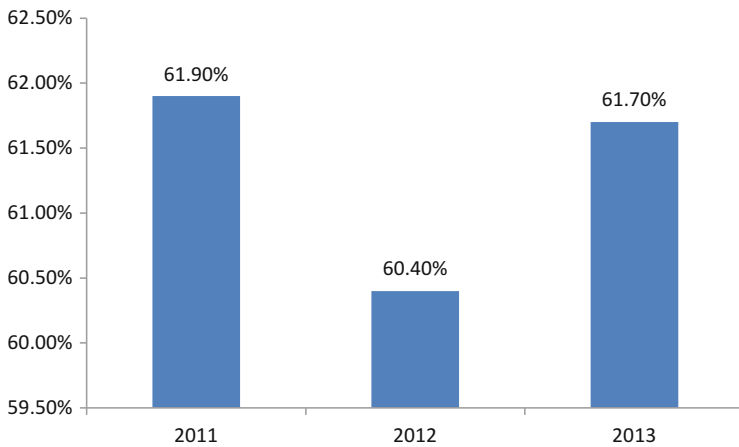


Fig. 5 The share of organizations used EDM systems in Russia from 2011 to 2013. *Source:* RFFSSS, available online http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/science_and_innovations/it_technology/

relationship that make corporations interact with other interested parties and thus increase their overall social and environmental responsibility.

4 ICT Innovation in Knowledge-Driven Economy

Information and communication technologies are technologies that have created a powerful wave of innovative activities to modify the global economy and ICTs have radically changed the technical and economical paradigm of the innovative activities. It brings a new paradigm to the configuration of economic activities by radically changing approach to using technologies for development. Major aspects of the new paradigm can be characterized as follows:

- ICTs create new knowledge sharing and collective ideas and novelties generation models. These “open access” models in such areas as open-source software, open innovative activities or shared knowledge associations have become widely spread and are very perspective in terms of fast knowledge spread in the world.
- ICTs require certain qualification, thus making education and professional training vital for knowledge-based economy, with ICT being its essential tool.
- ICTs have created such new services as e-commerce, e-financing, e-government, etc. These services can add to increasing economic efficiency. Yet, they may create new challenges of trust and security of the transactions related to the new e-services.

To describe contemporary processes, the term “knowledge economy” is often used. A peculiarity of the information economy or knowledge-driven economy is that it deals with a product that is not destroyed by use. Moreover, it can be accumulated in a powerful system of national and international resources, paying its way many times and bringing profit. The term “innovation economy” is also used to describe a new form of economic organization that highlights a special role of knowledge and innovation, primarily scientific knowledge.

Another term used is “internet economy”. It means limitless information resources, more predictability leading to more transparency between sellers and buyers. Some industries have changed significantly in the Internet economy (e.g., brokerage), and the importance of some powerful institutions such as the state and traditional money are changing too. The Internet makes money circulate more swiftly. It creates additional monetary challenges: how to regulate currency in circulation, how e-currency impacts on inflation and economic growth. A special issue is the so-called “e-money” that can be denominated in any currency. Such money is a convenient means to pay for goods and services over the Internet. Global acceptance of Internet technologies strengthens the economic trend towards self-regulation. Having created a “virtual workspace”, people can switch to individual work self-organization, which means ubiquitous entrepreneurship. A new challenge is the relationship between a national economy’s administrative and economic boundaries, as every company on the Internet is transnational.

ICTs have led to businesses changes within different models of relationships B2C, B2B and B2G. The term “G2B” (Government-to-Business) defines an area of relationship between government and businesses, stressing government agencies’

active participation. G2B is a part of “e-government” that also includes G2C (Government-to-Citizens) and G2G (Government-to-Government). G2B services are to improve efficiency of the relationship between government and businesses by actively using ICT and increasing the government’s openness to businesses. In turn, it accelerates development of the national economy. CRM (Customer Relationship Management) methods in public administration (customer-oriented approaches in providing public services) are particularly efficient.

G2B services include three elements: two participants—government agencies and companies—and ICT technical environment, most often the Internet. G2B services improve and simplify the exchange of information. As a result, they contribute to lowering administrative barriers and developing businesses. G2B services allow companies to get needed practical information from various public authorities and interact with them. New forms of government support appear, including those for SMEs. G2B services help SMEs get the same opportunities as big companies have, and peripheral businesses get the same opportunities as those located in metropolises to access public information and services. Russia’s G2B example is quite interesting. In 2005, TACIS was launched in St. Petersburg a pilot EU project “Development of Interactive G2B Services in Northwest Russia” (G2B-NWR). The information was collected and stored on the project’s portal and its resource Virtual Guide to G2B Services. At present the Common Government Services Portal of Russian Federation is part of the infrastructure that provides for the information and technological interaction of information systems used for rendering government and municipal services in electronic format (RFEGSS 2015). It is important to note that government is aware which role ICTs play in economic development, regulates legal aspects of ICT-business relationship and stimulates it. Public authorities introduce laws that regulate access to information and intellectual property rights. Government chooses what standards should dominate and how they are accepted. Government also creates the various structures (e.g., technoparks) for support of innovation. Government creates opportunities for enterprises to learn how to use ICT as a resource for different purposes within the frameworks of various (including international) programs, such as “E-Skills for Russian SMEs” to provide technical consultancy, educational trainings and legal advice.

5 Conclusion

Modern business is a complex multicomponent system, one of the primary elements of which are Information and Communication Technologies. Leaders of Russian companies are increasingly turning to the experience of the use of ICT solutions that help integrate the people, information and business processes to effectively manage all areas of business. The constant need for more hardware and software capabilities plays a significant role in sphere of ICT in Russia. More and more Russian companies realize their business need in automation of their processes by

implementation of contemporary information technologies and expert forecasts the stable growth of Russian ICT market.

Computer technologies are continuously developing, on a large scale and more quickly than technologies in other industries, they are complex, require further research and development. Moreover, the numbers of problems, which always proves the necessity to use ICT, is almost limitless.

The result of ICT development and use in economy is creation of the information economy which is focused on knowledge and its applications. In social sphere also, information activities play the dominant role, they determine analysis of social environment, control of decision making process, and develop communications. The number of organizations that actively use local and global networks, Internet technology, and Internet services is growing rapidly. Some of the Russian enterprises take advantage of information systems based on principals of SOA (service-oriented architecture) as a set of integrated Web-services. Reforms in education, which is radically changing, are impossible without using ICT.

The relationships between ICT and businesses are manifold and diverse. Information and communication technologies can simply be products or services. They can also be used as a tool to create, plan, model of efficient business processes. On one hand, the ICT-business relationships contribute to development of certain businesses as well as national, regional economies. Yet, on the other hand, they create a number of new economic, social, legal consequences and challenges. The ICT market growing quickly, ICT use is expanding in businesses, public administration, and social developments. All of this is forming a knowledge-driven economy. According to most experts, it is more competitive and stable.

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