

# Prospects of The Development of Information Technologies in The Business Environment

Lyudmila Sergeevna Onokoy, Galina Valentinovna Kalabukhova, Andrei Aleksandrovich Sorokin, Anastasiya Vladimirovna Polovnikova, Svetlana Viktorovna Babushkina

**Abstract:** *The article is devoted to the elaboration of prospects of the development of information technologies in the business environment. It has been established that currently, potential and real possibilities exist for the development of information technologies. For this purpose, it is proposed to view as a priority the preparation of the community for the perception of the information environment. To make this happen, it is essential to support any government and public, central and local initiatives and keep national informatization programs fully financed. It has been proposed to elaborate a state program for the development of the information community taking into account requirements necessary to provide its information sovereignty and information security. It has been proved that factors, which prevent information technologies from being developed, are relatively high lease rates of telecom channels and modest financial possibilities of most information services providers.*

**Index Terms:** *information, technology, business environment, market, investment, profit, society.*

## I. INTRODUCTION

Even though after the latest trends in the global economy the thesis about a new economy, to a large extent, is no longer topical, the information technology market is still an unfilled niche that, if commanded, can generate a considerable profit. Once until a certain stage, the bulk of the information technology market fell to production and sale of computer and telecommunications equipment. The situation is quite different now as the share of software production is on the rise.

In this context, a question arises: which place does the Russian Federation hold in the global software market and how competitive is it compared with other agents in the information technology market? The building of an information society in the country is one of the most topical

objectives of the present times.

However, at the current stage of the society's development, there are problems, which restrict the development of information technologies in the business environment, namely the insufficient understanding of possibilities offered by modern information and telecommunication technologies in public and economic activities, the non-compliance of statutory and legal framework in the informatization area with the modern requirements, in particular its non-compliance with the relevant international standards, insufficient development of national information telecommunication infrastructure.

Studies related to the problems of development of information technologies in the business environment were reflected in the papers by T.V. Alshanskaya [1], O.R. Zharkova [2], S.V. Karpova [3], E.A. Klochko [4], G.A. Kulikova [5], A.A. Shebzukhov [6] and others. However, the studies show that little attention is paid to this issue, although it is topical. For this reason, the study aims to describe the prospects for the development of information technologies in the business environment.

## II. METHODS

The research's methodological basis consists of fundamental provisions of the modern information process. Set objectives were attained from the positions of the systematic approach with the use of modern methods of research, namely the historical and monographic methods, the method of abstraction used to study and generalize theoretical and methodological basis of the establishment and development of information technologies, as well as the economic-statistical and economic-mathematical methods, the methods of tables, charts and the cartographical methods used to identify main trends in the development of the information environment in the business community.

The research's information base includes laws, statutory and legal acts issued by public authorities, data of operating analysis, papers written by Russian and foreign scientists, Internet resources, documents, which regulate the development of information technologies in modern conditions [7-9]. In the course of the research, we plan to set main directions for the development of information technologies in the business environment, to elaborate measures aimed to coordinate specialists' activities as part of the operation of information technologies,

**Revised Manuscript Received on 30 May 2019.**

\* Correspondence Author

**Lyudmila Sergeevna Onokoy\***, Financial University under the Government of the Russian Federation, Moscow, Russia.

**Galina Valentinovna Kalabukhova**, Moscow City University, Moscow, Russia.

**Andrei Aleksandrovich Sorokin**, Moscow City University, Moscow, Russia.

**Anastasiya Vladimirovna Polovnikova**, Moscow City University, Moscow, Russia.

**Svetlana Viktorovna Babushkina**, Institute for Tourism and Hospitality, Moscow, Russia.

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an [open access](https://creativecommons.org/licenses/by-nc-nd/4.0/) article under the CC-BY-NC-ND license <http://creativecommons.org/licenses/by-nc-nd/4.0/>

## Prospects of The Development of Information Technologies in The Business Environment

to substantiate provisions about the management of the development of the information environment in modern conditions.

### III. RESULTS

It is hard to deny that the Russian Federation has an image of the state with high intellectual potential. It can be said that this assumption is not pointless because the country has a big group of software developers. However, there are problems with financial support. The provision of financial resources is vital for the establishment of a competitive sector in the global market and allows to hire qualified professionals and form big groups of software developers.

As experience shows, only big companies, which hire hundreds and thousands of professionals, can deal with multi-million-dollar projects. All companies and groups of developers in the Russian Federation, which produce software, are categorized as "small" under global standards. It is not enough to have professional software developers in Russia for the Russian information technology industry to become competitive in the corporate software market.

Studies show that it is very important to run a representative office in the country of a client. First, this makes it possible to establish contracts with clients more efficiently. Second, the presence of office premises strengthens the client's trust in the company. Third, this allows a developer to offer a wide range of services to support implemented projects. This substantially solidifies the competitive advantage held by a software export company.

Another problem is the absence of the adequate legal framework for the regulation of actions taken in the software production market. It should be noted that there are no clear and, what's more important, effective laws on intellectual property. Russian companies currently see little incentives to develop and produce software en masse in the country.

Law has not yet determined the status of software when software products cross customs borders. For example, customs authorities officially state that if there is no physical movement of software products through borders, this product does not leave the customs territory and, consequently, is not a subject of exports. This comes as no surprise because physical products are used for exports on rare occasions.

The absence of conditions for the launching of software production facilities, low wages paid to programmers and software developers and, until recently, strong demand for services provided by IT professionals abroad prompted the best professionals to leave the country. Consequently, the Russian IT industry's loss ranges from 2,800 to 5,000 professionals per year, including software professionals.

There is an opinion that Russian educational institutions train a considerable number of qualified professionals who form the core of the country's workforce that can work in the software production sector. In fact, the situation is slightly different. Programs offered by educational institutions absolutely do not meet the requirements of modern enterprises. Having sufficient knowledge in academic subjects, university graduates do not have any experience in the execution of real projects.

On top of this, university officials do not understand that

programming differs from commercial programming. In order to train competitive professionals, it is essential, along with purely technical subjects, to introduce courses on the basics of management, the conduct of commercial projects, customer service, project marketing and industrial programming.

Upon analysis of the environment in the information technology market and review of the most successful experience of countries in the software market, it can be noted that the Russian Federation has prerequisites to develop the IT industry. According to some estimates, the Russian market's potential, taking into account products for exports, domestic ideas and software distribution, is equal to USD 1.6-2 billion. Wages paid to programmers in the country are below the global average. At the same time, Russian professionals have strong technical knowledge, and the organization of training centers based on a corporate investor will make it possible to train highly-qualified professionals.

Recently, it has become a widespread practice when a foreign company commissions the production of software products in countries that specialize in offshore programming, thereby avoiding lengthy procedures required to arrange migration of a professional and saving funds on the difference in wages.

For the development of information technologies in the business environment, it is necessary to take the following actions: to provide an economically stable environment and create the image of a reliable country; to offer favorable conditions for software investment; to establish technology parks that would unlock the industry's potential and ensure faster development of the sector; to develop an efficient legal framework that would regulate investing activities as a whole, and specific issues of the software market in particular (Figure 1).

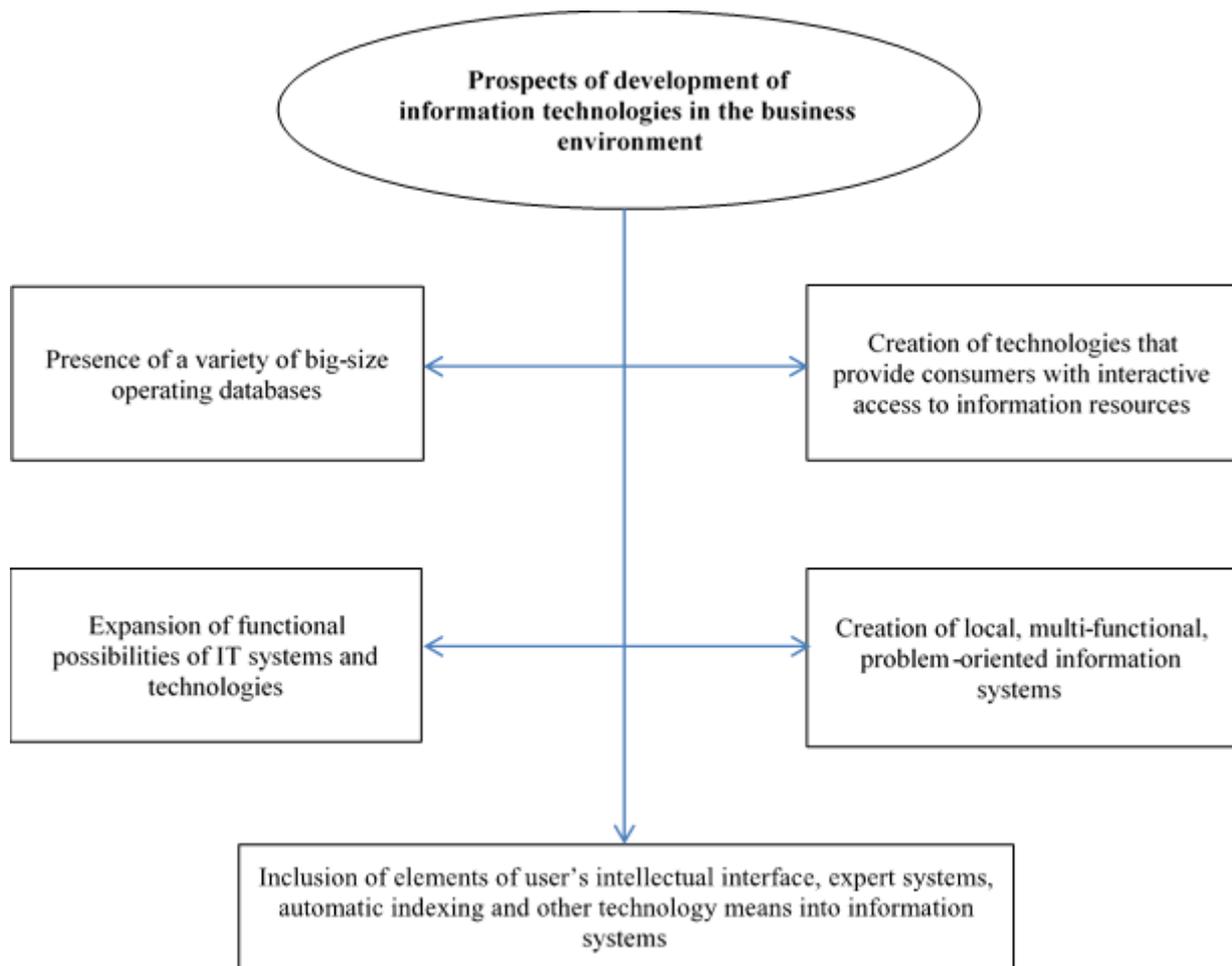


Fig. 1. Development of information technologies in the business environment

In this context, it is proposed to ensure that laws on the protection of intellectual property are efficient and the system designed to train IT professionals is upgraded because for the successful operation in modern business, it is not enough to be only a professional programmer. It is also necessary to have skills related to the practical execution of commercial projects, project marketing, management, customer relations and to create conditions for the efficient operation of research facilities in the IT and informatics sector.

The research allowed us to differentiate two paths for IT development. On the one hand, the information technology industry can target domestic markets and focus its efforts on the satisfaction of national demand for software products, and attempt to oust foreign software developers from domestic markets. However, there are some problematic issues in this scenario. The niche of mass software, including mass office software, is already occupied, and domestic software developers will fail to force out major foreign information technology companies.

In any case, an additionally occupied segment will entail too big expenses. National demand for specialized software products is not high because Russian concerns have not so far needed them and can spend millions of dollars on software. In addition, domestic consumers have not yet got accustomed to the use of licensed software products and it will take time before the purchase of expensive software becomes a

common practice. In this context, it can be noted that national demand cannot digest enough of the offered software products, and the focus on domestic consumers only will not be able to guarantee the development of information technologies in the Russian Federation.

Another approach is a focus on software exports, i.e. specialization in offshore programming. This is the only approach that can help the Russian economy have chances to develop its software production sector. Moreover, the main idea of the proposed measures is to create a favorable investment climate to boost activities in the offshore software segment. The state should play a key role here because the formation of an entrepreneurial environment remains the state's responsibility, and therefore, the issue about the substantiation of the proposed measures and the state's role in this respect intersect organically. It is necessary for the state to provide favorable conditions for IT investment. For this purpose, it is necessary, above all, to minimize potential investors' risks by providing economic and political stability through the introduction of a well-thought-out macroeconomic policy and the elaboration of efficient laws. The state should ensure a sufficient level of economic freedom to launch market mechanisms of the industry's development.

It is necessary to offer beneficial terms to agents that operate in the offshore programming sector: to establish technology parks with favorable conditions for software production, to lower tax rates, to provide tax holidays, to reduce taxes by amounts spent on the training of new professionals. That is, the development of specific mechanisms requires additional analysis aimed to eliminate the possibility of misusing the provided privileges.

The proposed measures will create incentives for the promotion of a considerable segment of software production to the real market and mobilization of its potential into more competitive major companies that will be able to execute competitive projects. This will also be conducive for an inflow of national financial resources into the industry. It is reasonable to draw foreign investment for two reasons: first, as purely financial assets and, second, foreign experience comes along with foreign investment. Software developers, which attracted foreign investment, can become examples of the successful organization of business, HR management and customer relations.

The introduction of these measures will make it possible not only to funnel financial resources into the high-tech industry but also to help professionals enter real information markets. Market conditions themselves created prerequisites for the consolidation of isolated specialists into big groups of developers. This is just the case when the general effect is bigger than the sum of components. This will increase substantially the industry's competitiveness as a whole. Technology parks, which can generate impulses and promote development to the regions, proved their efficiency.

There is also an acute necessity to upgrade the education system to train specialists who can efficiently act in the conditions of international business, i.e. government investment in human resources should be straight-forward and the state should refrain from training broad specialists. The implementation of the proposed measures does not entail any direct costs of the government, i.e. the state should not invest own funds in the industry and its role will be only to provide a stable investment competitive environment in priority industries. The proposed approach can only suggest moderately higher investment in human resources (an increase in financial resources spent on education). The model of a straight-forward education system will make it possible to release sizeable resources by reducing costs in other areas.

#### IV. DISCUSSION

The reliability of the proposed approaches is confirmed by the fact that the government's most effective measures are related not to financial expenses, but to the introduction of structural changes, the success of which depends not on the budget, but on governing bodies' readiness and willingness to move towards innovation changes [10-12]. Public authorities – executive and legislative – should work more efficiently because the mandatory term of success in the information technology sector is the presence of highly-qualified professionals. The provision of some benefits is attributable to a decrease in budget revenues, but currently, the taxable base in the software development segment is not high enough

to influence the balance of the budget, and in the future, the powerful competitive industry might produce a positive impact on the economy.

The Russian Federation has many highly-qualified software programmers, and their wages are below the global average. In addition, the Russian software market is not competitive either regionally or globally. Main hurdles that prevent the information technology sector from expanding is its weak investment appeal, the lack of the legal framework that would regulate the information technology industry, and the fact that executives have no experience in the conditions of modern information business.

At the same time, information business stands a good chance to grow into a strong industry through a focus on offshore programming. The state should play a decisive role in the introduction of the information technology industry's development program, i.e. to create favorable conditions for the mobilization of investment resources in the industry, and to take the current information market to a new development level. This will promote the establishment of strong competitive companies in the global market and the development of the industry.

#### V. CONCLUSION

A conclusion section is not required. Although a conclusion may review the main points of the paper, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions.

#### APPENDIX

It is optional. Appendixes, if needed, appear before the acknowledgment.

#### ACKNOWLEDGMENT

It is optional. The preferred spelling of the word "acknowledgment" in American English is without an "e" after the "g." Use the singular heading even if you have many acknowledgments. Avoid expressions such as "One of us (S.B.A.) would like to thank ... ." Instead, write "F. A. Author thanks " Sponsor and financial support acknowledgments are placed in the unnumbered footnote on the first page.

#### REFERENCES

1. T.V. Alshanskaya, A.D. Kostyleva, "Informatsionnye tekhnologii v dizaine: problemy, perspektivy, razvitie" [Information technologies in design: problems, prospects, development], *Science – of the industry and services*, 10, 2015, pp. 11-12.
2. O.R. Zharkova, "Virtualnaya realnost: perspektivy i razvitie informatsionnykh tekhnologiy" [Virtual reality: prospects and development of information technologies], *Bulletin of young scientists from the Saint Petersburg University of Technology and Design*, 1, 2018, pp. 117-121.
3. S.V. Karpova, I.A. Firsova, Yu.I. Firsov, A.A. Chub, "Modelirovanie protsessa internet-kommunikatsii" [Modeling of Internet communication], *Economics. Business. Banks*, 7, 2018, pp. 24-35.
4. E.A. Klochko, D.N. Rezenkov, "Perspektivy v razvitii informatsionnykh tekhnologiy" [Prospects in the development of information technologies], *NaukaPark*, 3(54), 2017, pp. 41-43.

5. G.A. Kulikova, S.P. Novikov, "Dinamika rynkov informatsionnykh tekhnologiy i programmnoho obespechenia v usloviakh neustoiichivogo ekonomicheskogo razvitiia: itogi i perspektivy razvitiia" [Dynamics of information technology and software markets in the conditions of unstable economic development: results and prospects of development], *Economics and Entrepreneurship*, 2-2(67), 2016, pp. 131-136.
6. A.A. Shebzukhov, "Razvitie informatsionnykh tekhnologiy: sostoyanie i perspektivy" [Development of information technologies: condition and prospects], *Scientific methodical digital magazine Kontsept*, S9, 2016, pp. 39-45.
7. O.A. Blokhina, O.N. Beketova, E.E. Kuzmina, O.E. Lebedeva, M.I. Podzorova, "Improving the technology of innovation systems management at an enterprise", *International Journal of Civil Engineering and Technology*, 9(13), 2018, pp. 137-143.
8. N.A. Rykhtikova, E.Ya. Anisimov, S.Yu. Evdokimov, E.V. Ivanova, O.E. Lebedeva, "Improvement of enterprise financing system in unstable economic environment", *The Journal of Social Sciences Research*, S3, 2018, pp. 298-303.
9. A.A. Shakhmametev, I.A. Strelets, K.A. Lebedev, "Strategic mechanisms for the future development of the international e-commerce market", *Espacios*, 39(27), 2018, pp. 21.
10. R.V. Kolupaev, O.M. Fadeeva, A.I. Ardashev, R.A. Novikov, K.A. Lebedev, "Improving methodical approaches to estimating financial safety of the enterprise", *Espacios*, 38(29), 2017, pp. 23-40.
11. O.V. Markova, N.A. Zavalko, V.O. Kozhina, O.V. Panina, O.E. Lebedeva, "Enhancing the quality of risk management in a company", *Espacios*, 39(48), 2018, pp. 26.
12. O.P. Zvyagintseva, O.A. Blokhina, S.A. Bannikov, V.M. Repnikova, K.A. Lebedev, "Development of small businesses at the regional level", *International Journal of Civil Engineering and Technology*, 9(13), 2018, pp. 119-126.