



Management processes reengineering: implementation principles and tools of industrial and innovative enterprise activity

Reingeniería de procesos de gestión: principios de implementación y herramientas de actividad empresarial industrial e innovadora

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ABSTRACT:

The relevance of research problem is caused by the need of developing a practical and effective flowchart for reengineering the production and innovation activities at the enterprise using appropriate tools, basic principles and recommendations for its implementation. The article attempts to develop a special flowchart with appropriate tools, basic principles and recommendations indispensable for reengineering the enterprise's production and innovation activities. It is recommended to accept innovative and radical measures, using the reengineering approach, in organizing the enterprise's production and innovation activities.

Keywords: reengineering approach, production and innovation activity, innovations, efficiency

RESUMEN:

La relevancia del problema de investigación se debe a la necesidad de desarrollar un diagrama de flujo práctico y efectivo para la reingeniería de las actividades de producción e innovación en la empresa utilizando herramientas apropiadas, principios básicos y recomendaciones para su implementación. El artículo trata de desarrollar un diagrama de flujo especial con herramientas apropiadas, principios básicos y recomendaciones indispensables para la reingeniería de las actividades de producción e innovación de la empresa. Se recomienda aceptar medidas innovadoras y radicales, utilizando el enfoque de reingeniería, en la organización de las actividades de producción e innovación de la empresa. **Palabras clave:** reingeniería, actividad productiva e innovadora, innovaciones, eficiencia.C

1. Introduction

The problem of innovative development and efficiency of industrial and innovative activity of the enterprise was current at all times and is especially current in the conditions of modern dynamic development of production systems. A modern solution to this problem requires other innovative approaches to the system, methods and principles of management at the enterprise in order to effectively use internal and external reserves.

The hypothesis of this study was to prove the relevance of effective use, proposed reengineering approach with the use of tools and principles, for implementing the enterprise's production and innovation activities.

The aim of the research is the development of such a flowchart of the reengineering's implementation of the production and innovation activities of the enterprise, the use of which will allow the introduction of process-based management rapidly and flawlessly.

2. Literature review

It seems to us that one of the defining innovative approaches to improving the management system at the enterprise, and particularly the development of production and innovation activity is associated with such a concept as "reengineering", characterizing process -based management. In the studies, we relied on recent research materials on the development of the concept of reengineering management processes to which can be attributed: Blinov A.O. and others (7), Ostroukhova N.G. (24), Klavsuts I.L., Rusin G.L. (19), Abdullaeva T.K., Gamidullaev B.N., Gamidullaev R.B. (1), Parakhina V.N., Solomina K.A. (26), Gamidullaev R.B. (14), Ogoleva L.N. (22), Oykhman E.G. (25), Balashov A.P. (6).

Our researches have shown that it is not impossible to identify the concepts of "reengineering" with such well-established concepts as "modernization", "restructuring", "reorganization", "improvement" etc. The word "reengineering" does not have a semantic equivalent in the modern Russian language, and it becomes obvious when it is thoroughly studied. The following researcher's writings can be attributed to the works of such topics of recent years: Sharaldaeva I.A. (33), Vasilyeva A.D. and others (37), Khomyachenkova N.A. (18), Efremova O. (12), Chichkina V.D. (11), Sulaimonov B.A. (15), Babich V.N (5).

As foreign and local researchers point out in its core and content, the introduction of the reengineering approach already provides for the introduction of innovative technologies, and it is noted in such works as: Shanin I.I. (33), Bondarenko V. V. etc. (8), Romanova A.D. (29), Osipov V.A. (23), Folomyev A.N. (13), Khan M. A., Panarina E. (17), Kuznetsov B.L. (20), Gerasimov B.N. (15), Sukharev O.S. (34), Rozhdestvenskiy A.V., Golov R.S. (30), Andreeva E.S., Nechaev A.S. (4), Akatov N.B., Panarina E.N. (2), Berlin Center OECD (28), Tsymbalov A.A., Degtyareva E.D. (36), Pertsev S.B. (27), David Allen (3).

Significant importance of business process reengineering (BPR) in technological, operational and economic design issues in the enterprise's activity is noted by such researchers as Bansod S.V. (9), Gimaraesh T., Bond W. (16), Bozdogan K. (10), Malysheva T.V., Shinkevich A.I., Ostanin L.M., Zhandareva L.F., Muzhavleva T.V., Kandrashina E.A. (21), Vorkapich M., Chochkalo D., Djoryevich D., Beshich S. (38), Saundarayan A. (31), and others.

The practical importance and insufficient research of the problem determined the need of developing a practical and effective flowchart for implementing the reengineering of production and innovation activities at the enterprise, using appropriate tools, fundamental principles and recommendations of the process-based management.

3. Methodology

Foreign and local scientists found out that the real amount of change toward improvement in the implementation of the reengineering program can reach over 40% toward improvement, while other methods of improvement lead to positive changes no more than 10-20%.

Our analysis of various definitions of the reengineering of enterprise management processes allowed us, having generalized them taking into account modern realities of innovative development and management features, to formulate more complete definition, unlike with those presented in their works by such researchers as: Blinov A.O. and others (7),

Ostroukhova N.G. (24), Klavsuts I.L., Rusin G.L. (19), Abdullaeva T.K., Gamidullaev B.N., Gamidullaev R.B. (1), Parakhina V.N., Solomina K.A. (26), Gamidullaev R.B. (14), Ogoleva L.N. (22), Oykhman E.G.(25), Balashov A.P. (6), Sharaldaeva I.A. (32), Vasilyeva A.D. and others (37), Khomyachenkova N.A. (18), Efremova O. (12), Chichkina V.D. (11), Sulaimonov B.A. (35), Babich V.N (5).

We consider the concepts of reengineering of enterprise management processes as deep, comprehensive and radical transformations, rethinking and redesigning management processes with the goal of achieving radical improvements in all performance indicators and ensuring high marketability.

For effective development and maintenance of competitive advantages, enterprises need constantly not only to develop and implement innovative technologies, the production of new products, but also in general to resume production and innovation activities. In fact, we consider this activity as a special kind of effective economic activity, oriented to implementation of best innovations. Therefore, fundamentally new approaches and methods are required for such activities, which, in our view, can be reengineering of management processes.

4. Results

The organization of effective and progressive production and innovation activities at the enterprise should be based on the following fundamental principles.

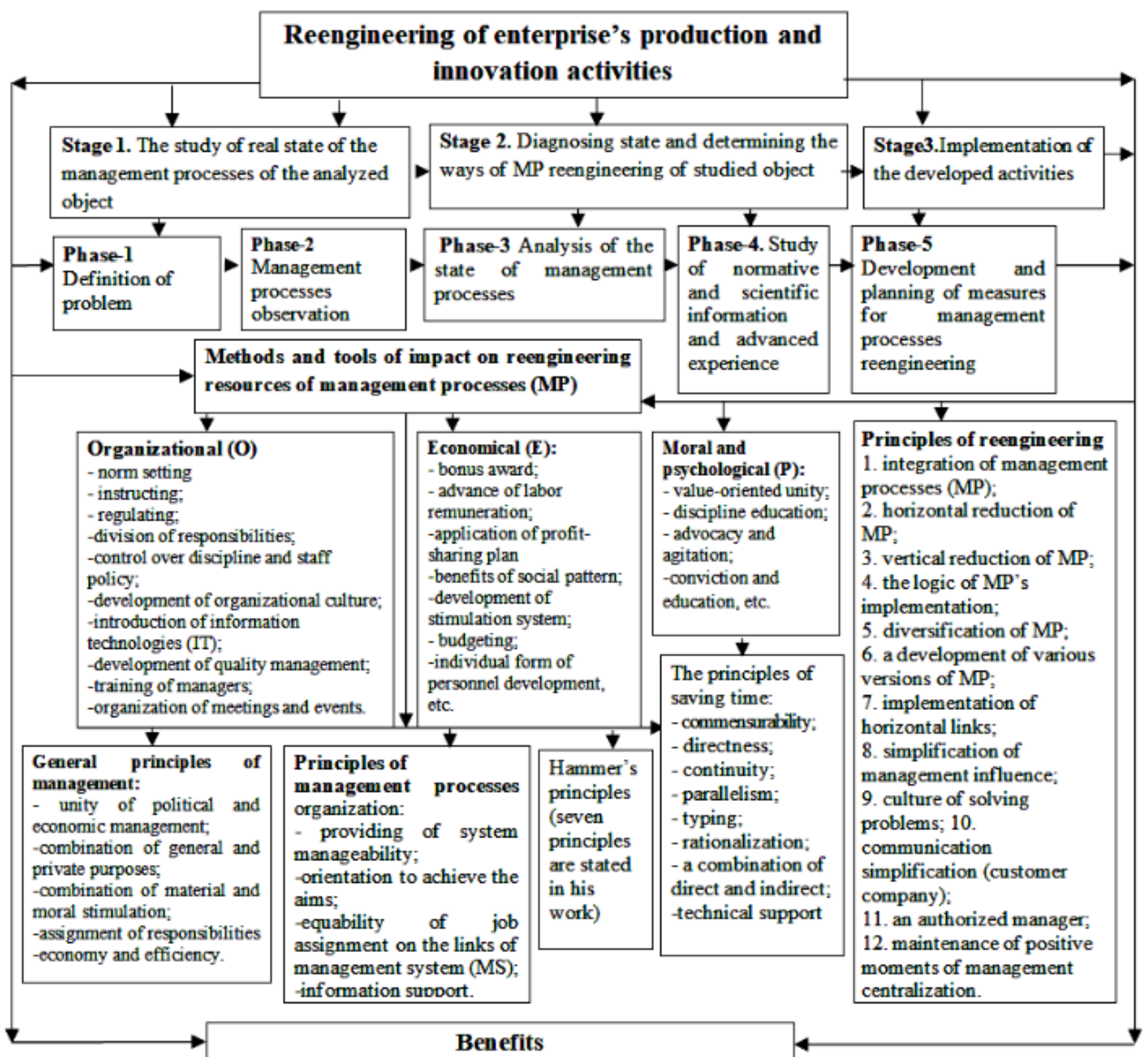
Principle of balance of interests. The idea of this principle is that all kinds of innovations, implemented at the enterprise, and as a result produced products should be considered in total as a result of searching for the interests of the producer and consumers. In other words, the vital interests of the enterprise in innovative development, plus the requirements of the consumer market demand. This principle should act as the determining one.

Principle of continuity. This principle should provide the most important requirement of innovation activity at the enterprise, the idea of which consists in the continuity of reengineering of the production and innovation activities of the enterprise with a targeted focus on the consumer.

The observance of the principles of reengineering of management processes, presented below, occupies a special place (Figure 1): 1. integration of management processes (MP); 2. horizontal reduction of MP; 3. vertical reduction of MP; 4. the logic of MP's implementation; 5. diversification of MP; 6. a development of various versions of MP; 7. implementation of horizontal links; 8. simplification of management influence; 9. culture of solving problems; 10. communication simplification (customer company); 11. an authorized manager; 12. maintenance of positive moments of management centralization.

Figure 1

A flowchart of the implementation of reengineering of enterprise's production and innovation activities



Besides, it is necessary to comply with a number of other principles presented in Figure 1, sequence of phases and stages using various methods and tools for implementing management processes reengineering.

In reengineering approach of managing the enterprise's production and innovation activities, it is necessary to perform the following stages of such approach implementing.

At stage-1, it is realized the study of real state of management processes of the analyzed object, with the purpose of exposure reserves of management processes at the enterprise, as well as preparation of all information for the full realization of following stages.

All actions at this stage are associated with information cycles of management processes.

At this stage, the following aims are provided:

- a clear definition of the problem (phase-1);
- an observation of all management processes (phase-2).

At stage-2, it is necessary to diagnose concretely to the studied object (enterprise) by its state (phase-3), as well as study of normative and scientific information and advanced experience (phase-4). Further, the main ways of implementing management processes reengineering are determined with taking final decisions and with calculating the economic efficiency of the implemented measures. The end result of this stage will be a set of documentation with a wide range of different issues, which allow us to move on to the next stage.

The most important one is stage-3, implementation of planned measures, when a lot of organizational and other significant works should be carried out. Taking into account the importance of work, this stage should be carried out mainly under the guidance of the head of the enterprise, which understands the problem well and is competent in the management issues.

The set of our studies and huge analytical work on reengineering allowed us to determine the most significant practical recommendations for the implementation of management processes reengineering at the enterprise, which include:

- definition of main problems of department interaction at the enterprise in the implementation of processes;
- identification of a number of important processes, which effectiveness we are not satisfied, with the definition of the boundaries of these processes and taking into account the influence of other related processes on them;
- to build a distinct and powerful information system of the computer network of the enterprise and its branches;
- necessary to determine the command structure for each direction responsible for performing work within defined business processes;
- to appoint with an order responsible persons (managers) for realization specific work within defined business processes;
- necessary to conduct a full cycle of reengineering, that is, modeling, making information system, defining a system of process indicators and changing processes;
- finally, it is necessary to assess the economic efficiency of the enterprise before and after the reengineering implementing.

It should be emphasized that the indispensable implementation of the above mentioned recommendations is an important part of preventing the expected and common mistakes. Therefore, the timely identification and knowledge of these errors, leading the enterprise to failure, will prevent them and lead the realization of reengineering at the enterprise to success.

5. Discussion

Practice and evaluation of experts show that at least 50% of the reengineering projects were unsuccessful. Specially conducted competent studies and evaluation of many consultants specializing in this and similar topics on cause identification of failure and determination the prerequisites for success have shown that the main reasons for the failure of the implementation of reengineering business projects can include:

- the project manager was not competent and held a low official rank;
- excessive attention to technology issues was attended, omitting other important issues;
- the person, responsible for the project, has insufficiently high official rank;
- no decent and adequate information system based on the latest technologies;
- consumer attitude of managers (managers) to the project, that is, "let them do for me."

Foreign and local experience in the implementation of management processes reengineering at enterprises shows that the organization of innovative activities cannot be without involving other interested organizations and enterprises participated in the development and implementation of enterprises' innovative projects with the allocation of functions between them.

As a rule, the main participants in the integrated formations of the process of production and innovation activity are:

1. Enterprises - consumers of innovative inventions, that is, which in practice will implement the results of innovative projects using the most progressive one.
2. Enterprises - customers of innovative inventions, which can be different companies, organizations and departments of various levels, authorized by the interests of consumers,

which determine the task of developing innovative projects, taking into account the expected results and costs.

3. Leading - enterprises developers of innovative projects. In general, such organizations are research and design organizations, consulting companies, higher education institutions, venture companies, etc. They implement the process of developing innovative projects and all organizational and methodological work, replying for its quality and scientific and technical level of the project.

4. Enterprises - co-authors of development of innovative projects proceeding from aims and tasks of certain leading developers prepare and develop specific innovative projects and are responsible for compliance with target requirement, as well as for the timing and quality of development. All these requirements must be specified in the terms of the contract.

As we see from the content of material, in the development of industrial and innovation activities of the enterprise, the many components of reengineering of the management processes (stages, phases, methods, principles, participants) are called to ensure the implementation of innovative projects quickened and effectively.

Thus, it follows, from mentioned above, that for the development of science and management practice, a constant and thorough study of management processes is an acute need in modern conditions. In current conditions of innovative, accelerated and dynamic development, spatial and temporal components are of extreme importance. When implementing reengineering of management processes, it is necessary to comply with the proposed stages and phases for realization your company's production and innovation activities, using the above methods and influence tools to the resources of management processes reengineering. Also it is necessary to adhere to all principles: general principles of management; principles of reengineering; Hammer's principles; principles of management processes organization; principles of time saving. All listed will ensure successful implementation of management processes reengineering at your enterprise, which will ensure its efficient development and high marketability.

Depending on the state of the enterprise, its specialization, size, financial and economic situation and its level of development in the market conditions, the objectives of the company's production and innovation policy can be achieved in three ways:

1. By self-development and mastering of production innovations. This direction can be mastered, only by enterprises that have the appropriate production and innovation base, as well as staff, material, financial and other resources. There are very few ones, and they are usually exceptions.

2. By purchasing such developments. This direction is followed mainly by enterprises with good financial condition.

3. Preparation of developments in integration with other interested enterprises and organizations. Most enterprises follow this way in the conditions of innovative economy by building their strategy of production and innovation policy with other enterprises and organizations of various industries on an integration basis.

In modern Russia's conditions, there are several different forms for organizing and solving innovative problems in relation to the implementation of production and innovation activities. It is possible to carry to such forms:

1. Innovative systems. These systems are oriented to a wide and comprehensive activity on innovations, from development and implementation to a wide consumption of innovations. Such systems, formed mainly by the state, function under its control, and their effectiveness is a consequence of the comprehensive regulatory and control impact of state structures which purpose is to form and accumulate the information and innovation base necessary for the timely and accelerated development of production and innovation activities of enterprises.

2. Innovative clusters. Clusters as a form of organization act as a set of interacting and interconnected enterprises, organizations, associations formed as one group on a voluntary basis, which aim is to ensure sustainable, reliable and effective development on the basis of

partnership agreements for the creation of common organizational and economic potential and a mechanism for enhancing innovation activity.

This form of activating process organization and increasing the efficiency of production and innovation activities of various enterprises is a set of interacting enterprises and organizations, that have united in one group on a voluntary basis in order to jointly ensure their sustainable development and increase efficiency on the basis of a partnership contract for the creation of a common organizational and economic potential and the mechanism for activating innovative activities.

Independent enterprises of various forms in clusters carry out their activities using common information and innovation resource base. Primarily innovative clusters of enterprises are formed on the principles of network organizations, which imply:

- first of all - achieving synergetic effect as a result of joint activity;
- a significant reduction of production and management costs, the distribution of risks and responsibility of innovation activities between participants, on the basis of reducing costs and distributing risks of innovation between them in order to increase the efficiency of production and innovation activities;
- to all participants of innovative cluster formations in the management of production and innovation activities, the use of network technologies, the advantage of which is the formation of common information and innovation base and accelerated access possibility to it for all participants.

6. Conclusions

Thus, the need for in-depth study of management processes is caused not only by the needs of practice, but also by the development of management science. In modern conditions of accelerated development, spatial, temporal and dynamic characteristics are of particular importance. Reached results once again prove the necessity in implementing the reengineering approach at the enterprise, using presented flowchart of management processes reengineering, and its subordination is very important both to general management principles and to principles reflecting the dynamics of management and acting as basic rules, building management processes, with compulsory use of data by author of the recommendations. Besides, depending on the state of the enterprise, we need to choose the most acceptable way, from the above mentioned three ways, for implementation the production and innovation activities of your enterprise.

Bibliographic references

- Abdullaeva T.K. Gamidullaev B.N. Gamidullaev R.B. (2016). The concept of management process reengineering: defining categories of management science. *Ekonomika i predprinimatelstvo*, 1 (1):184-186.
- Akatov N. B., Panarina E. N. (2014). Competence centre in the development strategy of a large high-tech enterprise. *Menedzhment i biznes-administrirovaniye*, 3:184-186.
- Allen D. (2011). *Getting Things Done: The Art of Stress-Free Productivity*. Moscow: *Mann, Ivanov i Ferber*, 368.
- Andreeva E.S., Nechaev A.S. (2014). The development of innovative potential in Russia: problems and ways of their solution. *Finansy i kredit*, 17 (593):22-29.
- Babich V.N. (2014). Innovative business- process model. Ekaterinburg: *Uralskiy universitet*, 184.
- Balashov A.P. (2016). Theoretical foundations of enterprise restructuring. Moscow: *INFRA-M*, 254.
- Blinov A.O., Rudakova O.S., Zakharov V.Ya., Zakharov I.V. (2015). Reengineering of business processes. Ed. Blinov A.O., Moscow: *YuNITY-DANA*, 344.
- Bondarenko V.V., et.al. (2018). The role of regional development institutions in enhancing the innovation potential of the Russian Federation. *Regionalnaya ekonomika: teoriya i*

praktika, 16(1):83-100.

Borade A. B., Bansod S. V. (2007) Domain of supply chain management – a state of art. *Journal of technology management & innovation*, 2(4):109-121.

Bozdogan K. (2010). Evolution of the lean enterprise system: a critical synthesis and agenda for the future. *Institute for Data, Systems, and Society*, 1-26.

Chichkina V.D. (2010). Restructuring in enterprise development management strategy. *Rossiyskoe predprinimatelstvo*, 5.

Efremova O. (2010). Performance evaluation of enterprise restructuring. Novosibirsk: *SibAK*.

Folomyev A.N. (2017). New industrial policy and innovative transformation of national economy. *Innovatsii*, 12: 28-33.

Gamidullaev R.B. (2014). The conceptual approach of reengineering of enterprise management processes. Moscow: *Pero*, 156.

Gerasimov B.N., Novikova N.A. (2015). Specific nature of implementation of innovation management process at chemical industry enterprises. *Vestnik Povolzhskogo gosudarstvennogo universiteta servisa. Ekonomika*, 4(42):110- 121.

Gimaraesh T., Bond W. (1996). Empirically assessing the impact of business process reengineering on manufacturing firms. *Gestro & Produzro*, 3(1):8-32.

Khan M. A., Panarina E. (2017). The Role of National Cultures in Shaping the Corporate Management Cultures: A Four Countries Theoretical Analysis. *Journal of Eastern European and Central Asian Research (JEECAR)*, 1: 25.

Khomyachenkova N.A. (2011). The mechanism of integral stability assessment of industrial enterprises development. Abstract of Ph.D thesis. Moscow: 21.

Klavsuts I.L., Rusin G.L. (2017). Improvement of business processes in the power supply system through the use of innovative technology systems NORMEL. *Rossiyskoe predprinimatelstvo*, 11.

Kuznetsov B.L., Kuznetsova S.B. (2016). Technological management in the conditions of scientific and technological revolutions of the XXI century. *Upravlenets*, 3:2-7.

Malysheva T.V.; Shinkevich A.I.; Ostanin L.M.; Zhandarova L.F.; Muzhavleva T.V.; Kandrashina E.A. (2018). Organization challenges of competitive petrochemical products production. *Revista ESPACIOS*, 39 (09).

Ogoleva L.N. (2010). Radical production reengineering. Moscow: *INFRA-M*, 245.

Osipov V. A., et.al. (2018). Evaluation of innovative development of industrial enterprises and the ways of its stimulating. *Problemy teorii i praktiki upravleniya*, 1:89-97.

Ostroukhova N.G. (2015). Reengineering of business processes: interrelation with innovative activity of the enterprise. *Vestnik Astrakhanskogo gosudarstvennogo tekhnicheskogo universiteta. Ekonomika*, 3:119-127.

Oykhman E.G. (2010). Business reengineering. Moscow: *Finansy i statistika*, 152.

Parakhina V.N., Solomina K.A. (2015). Business processes reengineering of a growing industrial company as the basis of its organizational renewal and entropy reduction in the management system. *Vestnik Severo-Kavkazskogo federalnogo universiteta*, 5(50):95-102.

Pertsev S.B. (2013). Influence of innovative system on the economic growth of region. *Sovremennye problemy nauki i obrazovaniya*, 6. available at:<http://www.science-education.ru/ru/article/view?id=11156> (accessed: 29 March 2018).

Prospects of science, industry and technology. *Berlin Center OECD*, available at: <http://www.keepeek.com/DigitalAsset-> .

Romanova A.D. et.al. (2018). Evaluation of spatial and temporal characteristics of regions' innovative development. *Problemy teorii i praktiki upravleniya*, 1:43-54.

Rozhdestvenskiy A.V., Golov R.S. (2015). Economic development of mechanical engineering in Russia: state, development, dynamics of development and main vectors of modernization. *Ekonomika i upravlenie v mashinostroenii*, 1 (37): 5-12.

Saundrarayan A. (1996). Business Process Design and Organizational Structure: Technological, Operational and Economic Issues. *AMCIS 1996 Proceedings*, 85. Available at: [//aisel.aisnet.org/amcis1996/85](http://aisel.aisnet.org/amcis1996/85).

Sharaldaeva I.A. (2015). Theoretical foundations of restructuring. Ulan-Ude: *Vostochno-Sibirskiy Gosudarstvennyi Universitet Tekhnologiy i Upravleniya*, 160.

Shanin I.I. (2012). Management of innovative development at an industrial enterprise. *Voprosy innovatsionnoy ekonomiki*, 4(14):30-39.

Sukharev O. S. (2015). Economic growth and technological change: global trends. *Mirovaya ekonomika*, 2:131-146.

Sulaymonov B.A. (2016). Enterprises restructuring at the present stage. *Molodoy uchenyy*, 10:894-896. available at: <https://moluch.ru/archive/114/28331/> (accessed 07 June 2018).

Tsymbalov A.A., Degtyareva E.D. (2014). Commoditization of scientific developments: problems and solutions. *Innovatsii v selskom khozyaystve*, 4(9):184-187.

Vasilyeva A.D., et.al. (2011). Reserves of intensification, marketability and sustainable development in the modernization system of agro-industrial production. *Vestnik Saratovskogo gosagrouniversiteta im. N.I. Vavilova*, 11: 88–91.

Vorkapich M., Chochkalo D., Djoryevich D., Beshich C. (2017). Implementation of 5S tools as a starting point in business process *reengineering*. *Journal of engineering management and competitiveness (JEMC)*, 7(1):44-54.

Zinder E.Z. (2009). Business-reengineering and technology of system designing. Moscow: Tsentr Informatsionnykh Tekhnologiy, 324.

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