

GCPMED 2018
**International Scientific Conference "Global Challenges and
Prospects of the Modern Economic Development"**

**SUPPORT OF DECISION-MAKING PROCESS ON THE BASIS OF
NEURAL NETWORK TECHNOLOGY**

E.Yu. Vinogradova (a), S.V. Pivneva (b)*, A.A. Soldatov (c), D.A. Denisova (d), S.V.
Veretekhina (e), E.G Shmakova (f)

*Corresponding author

(a) Ural State University of Economics Yekaterinburg, Yekaterinburg, 8 Marta street, 62, 620144, Russia, e-mail:

katerina@usue.ru,

(c) Russian State Social University, Wilhelm Pieck str., 4, Moscow, 129226, Russia, e-mail: tlt-swetlana@yandex.ru,

(d) Russian State Social University, Wilhelm Pieck str., 4, Moscow, 129226, Russia, e-mail: soldatovaa@rgsu.net,

(e) Russian State Social University, Wilhelm Pieck str., 4, Moscow, 129226, Russia, e-mail: denisovada@rgsu.net,

(e) Russian State Social University, Wilhelm Pieck str., 4, Moscow, 129226, Russia, e-mail: veretekhinasv@rgsu.net,

(f) Russian State Social University, Wilhelm Pieck str., 4, Moscow, 129226, Russia, e-mail: shmakovaeg@rgsu.net

Abstract

In article describes main metodological principles of designing of intellectual information system for realization of support of decision-making by a management of managing subjects. Process of development of the effective unified technique of creation and introduction of the intellectual automated system which is characterized by existence of ability of a message a configuration of orders and maintenance of clients to adapt under activity of the company of a certain branch, to consider specifics of production, a possibility of change of system in the shortest terms and also orientations to strategic objectives of the company, remains insufficiently worked. Processes are classified on the main and auxiliary. The main processes create new quality of production. Auxiliary processes create infrastructure of the enterprise. The person, responsible for process, has the right to change and improve it and is the owner of process. Borders of process are defined by an interval from the moment preceding the first operation (border of "entrance") and till the moment following the last operation (border of "exit"). Also in the article describers ordering of modern scientific representations about intellectual information technologies in a context of allocation of a subject field of their application. In conclusion it should be noted that use of similar technologies in managements of the industrial enterprise, will lead to increase in productivity of the enterprise and reduction of terms of self-sufficiency of investments made in information technology development of support of adoption of strategic and administrative decisions.

© 2019 Published by Future Academy www.FutureAcademy.org.UK

Keywords: Intellectual information technologies, information systems, management of the enterprises.



1. Introduction

Deepening of market transformations in economy of the Russian Federation, strengthening of the competition as a result of globalization of the world market, transition of an industrial complex to innovative model of development have significant effect on statement and resheky new questions in a control system of production. In such conditions information opportunities by means of a combination and development of various elements, methods, models and instruments of planning, modernization of already existing methods raise (Vinogradova & Galimova, 2017).

Process of development of the effective unified technique of creation and introduction of the intellectual automated system which is characterized by existence of ability of a message a configuration of orders and maintenance of clients to adapt under activity of the company of a certain branch, to consider specifics of production, a possibility of change of system in the shortest terms and also orientations to strategic objectives of the company, remains insufficiently worked (Vinogradova, 2012; Caregorodcev, 2003). Further scientific justification of automation of model of the solution of tasks of business management by means of development of a method of formation and development of complex system of economic planning and management on the basis of algorithms of application of neuronets which feature is reorganization of business processes at production management is offered, the dependence of management on character and a condition of the enterprise is studied. Introduction of uniform system of the classification of income and expenses suitable for each business unit, within process of management of production will allow the enterprises to come to essentially new level of efficiency of activity, to distinctly represent under what articles income and expenses of each separate division or the enterprise was distributed (Behstens, Van Den Berg, & Vud, 2006; Aleksandrova & Anikin, 2014).

2. Problem Statement

The financial structure has to correspond to kinds of activity of the company. This approach will allow to estimate results of activity of the enterprise for each direction having the budgets, having provided their effective management.

Integral part of the software product is creation of structurally functional model of the solution of problems of planning and management with differentiation of business processes.

Processes are classified on the main and auxiliary. The main processes create new quality of production. Auxiliary processes create infrastructure of the enterprise. The person, responsible for process, has the right to change and improve it and is the owner of process. Borders of process are defined by an interval from the moment preceding the first operation (border of "entrance") and till the moment following the last operation (border of "exit") (Belyaev, 2013; Vodopyanova, 2014).

3. Research Questions

The system has the following integrative properties:

- the variety and distinction of components is connected with their functional specificity and autonomy;

- the properties which are absent in separately taken components can be present at system in general;
- structure that means existence established interrelations and the relations between system components, their distribution on hierarchy levels.

Opposition of system to an environment or Wednesday is its initial characteristic (Martyinov, 2012; Marshova, Protasova, & Alenicheva, 2015; Mnogogreshnov & Samohvalova, 2015). Everything that is outside system belongs to Wednesday. Wednesday is a set of all systems except for the studied part of the world around. In this regard it is possible to draw a conclusion that the system represents the final set of objects allocated from the environment by delimitation of system. Between the external environment and the enterprise there is a large number of interrelations which are the instrument of interaction of system and Wednesday. Exchange of material, financial, power, information and other elements between system and is made Wednesday by means of mutual transfer on entrance and output communications (Nikolenko & Zobnin, 2016). Resources are elements which are transferred to system from the environment, and end products of activity of system - elements which the system transfers to the external environment.

Achievement and maintaining desirable result of behavior of system acts as its main objective. Interpretation of the purpose of system in relation to the enterprise – aspiration to optimum result which represents maximizing value of the capital on condition of constant preservation of the established liquidity level, achievement of the goals of production and realization taking into account social tasks (Popov, 2012; Suhanova & Mentjukova, 2016).

4. Purpose of the Study

The generalized description of stages of process of creation of an expert control system of quality of production of the industrial enterprise are provided in Table 01.

Table 01. Stages of the process design and development of corporate information systems

Stage №	Name of a stage	The realized (reached) functions, in aspects:			
		Marketing	Design	Production	Other functions
00	Planning	Clarification of market conditions and opportunities. Definition of segments of the market	Choice of the platform and architecture of future product. Assessment of new technologies	Identification of production restrictions. Development of strategy	Research: demonstration of available technologies. Financial: installation of the planned purposes
01	Development of the concept	Detection of needs of users. Definition of key users. Identification of the competing products	Research of feasibility of the offered concepts. Creation of the concept of design. Creation and testing of models and prototypes	Estimation of cost of production of a product. Assessment of feasibility of production of a product	Financial: assistance to carrying out the economic analysis. Legal: patent researches

Stage №	Name of a stage	The realized (reached) functions, in aspects:			
		Marketing	Design	Production	Other functions
02	System design	Development of the plan of release of additional accessories and expansion of family of production. Installation of target reference points for the price of sales	Consideration of alternative architecture of a product. Definition of the main subsystems and interfaces.	Definition of the scheme of production. Calculation of the planned costs	Financial: participation in carrying out the analysis of expediency of independent production. Service: identification of possible problems in service
03	Working draft	Development of the marketing plan	Definition of geometry of a product. Installation of admissions. Creation of the project documentation	Definition of processes of production. Definition of processes of quality control.	-
04	Tests and operational development	Development of advertizing materials. Participation in operational tests (consumer testing)	Tests of operational qualities. Modification of design following the results. Obtaining necessary certificates	Assistance to the transfer of production to an operating mode. Working off of processes of production. Training of production personnel. Improvement of processes of quality control	Sale: development of the sales plan
05	Transfer of production to an operating mode	Distribution of prototypes	Assessment of prototypes	Beginning of operations on production start	-

5. Research Methods

In many practical tasks an available set of knowledge is incomplete or inexact. In such situations the probabilistic reasonings allowing the systems of artificial intelligence to work in the conditions of uncertainty (Aleksandrova & Anikin, 2014; Belyaev, 2013) are used.

The main objective of system is the description of a way of achievement of the goal fixed by the expected numerical characteristics. The set of the interconnected purposes represents their system. It is possible to allocate several classifications of systems of the purposes which treat:

- short-term (performance in a year or earlier) and long-term (performance through the period exceeding 1 year) the purposes;
- tactical and strategic objectives;

- financial, production, social purposes, improvement of quality of production and others.

6. Findings

The interface of process represents the organizational, technical and information mechanism when which using the interrelation between processes is carried out. Therefore optimization of activity of the enterprise has to be organized business around – processes for the purpose of overcoming their fragmentariness for achievement of considerable improvements of key indicators therefore the main objective of creation of the process focused enterprise is allocation business – processes according to grocery lines and functional divisions with their subsequent connection in through processes which are aimed at creation of different types of production (Goraeva & Shamina, 2015; Komkov, Bondareva, Romantsov, Didenko, & Skripnyuk, 2015; Kritskaya, 2016).

Each company represents difficult socially – technical system. The concept "system" used in modern practice, has a set of semantic nuances and values. In this regard it is necessary to define the values directly related to the system analysis of activity of the enterprise (Kuznetsova & Nikiforov, 2013; Lyapkina & Zharikova, 2014). The most suitable definitions are given below.

7. Conclusion

In conclusion it should be noted that use of similar technologies in management of the industrial enterprise, will lead to increase in productivity of the enterprise and reduction of terms of self-sufficiency of investments made in information technology development of support of adoption of strategic and administrative decisions and will lead to the solution of a problem of improvement of quality of production with simultaneous decrease in its prime cost.

Acknowledgments

The work was carried out within the framework of the RFBR grant project No. 17-46-630560 "Conceptual innovation model of the socio-ecological and economic system of the Samara region".

References

- Aleksandrova, E.A., & Anikin, S.A. (2014). Model of the stimulating salary as a problem of optimum control. *Vestnik Yuzhno-uralskogo Gosudarstvennogo Universiteta*, 7(4), 22-35.
- Behstens, D. Eh., Van Den Berg, V.M., & Vud, D. (2006). *Nejronnye seti i finansovye rynki. Prinyatie reshenij v trgovykh operacijah*. Moscow: TVP Nauchnoe izdatel'stvo,
- Belyaev, V.K. (2013). *Economic assessment of administrative decisions*. Irkutsk: BGUEP
- Caregorodcev, V.G. (2003). Vzgljad na arhitekturu i trebovaniya k nejroimitatoru dlya resheniya sovremennyh industrial'nyh zadach. In A. N. Gorban (Ed.). *Nejroinformatika i ee prilozheniya* (pp.171-175). Krasnoyarsk: Institute of computational modeling SB RAS.
- Goraeva, T.Yu., & Shamina, L.K. (2015). Methods of monitoring and assessment of innovative activity of the enter-prise. *Nauchno-tehnicheskie vedomosti Sankt-Peterburgskogo gosudarstvennogo politehnicheskogo universiteta*, 3(221), 198-210.
- Komkov, N.I., Bondareva, N.N., Romantsov, V.S, Didenko, N.I., & Skripnyuk, D.F. (2015). *Methodical and organizational bases of management of development of the companies*. Moscow: Nauka

- Kritskaya, S.S. (2016). Increase in labor productivity in the hi-tech industry: incentives and social risks. *Ekonomicheskij analiz: teoriya i praktika*, 4 (451), 107-121.
- Kuznetsova, T.E., & Nikiforov, L.V. (2013). About the strategy of using of spatial capacity of Russia. *Voprosy gosudarstven-nogo i munitsipalnogo upravleniya*, 2, 51-64.
- Lyapkina, N.A., & Zharikova, A.V. (2014). Features of operational management of production as one of aspects of management of changes at the present stage. *Problemy i perspektivy razvitiya ekonomiki i menedzhmenta v Rossii i za rubezhom*, 2(2), 409-413.
- Marshova, T.N., Protasova, L.E., & Alenicheva, T.N. (2015). Methods of an assessment and analysis of technological level of production potential of the Russian industry. *Sbornik nauchnyih trudov IMEI*, 2, 106-131.
- Martynov, O.Yu. (2012). An assessment of results of research and development during creation of the knowledge-intensive production. *Izvestiya vysshih uchebnyih zavedeniy. Severo-Kavkazskiy region*, 2, 128-131.
- Mnogogreshnov, A.I., & Samohvalova, S.M. (2015). Hi-tech production in practice of modern management. *Aktualnyie problemy aviatsii i kosmonavtiki*, 2(11), 715-717.
- Nikolenko, T.A., & Zobnin, Yu.A. (2016). Automated management of modern productions and ERP-systems in Russia. *Ekonomika i predprinimatelstvo*, 4-1(69-1), 45-48.
- Popov, A.I. (2012). Creation of new model of development: modernization and conditions of transition to innovative economy. *Izvestiya Sankt-Peterburgskogo universiteta ekonomiki i finansov*, 4, 18-26.
- Suhanova, O.N., & Mentyukova, O.V. (2016). Econometric models as the analysis tool in management of economic systems. *Modeli, sistemy, seti v ekonomike, tehnike, prirode i obschestve*, 1(17), 125-134.
- Vinogradova, E.YU. (2012). Strukturno-funktsional'naya model' intellektual'noj informacionnoj sistemy upravleniya predpriyatiem gazotransportnoj otrasli. *Prikladnaya informatika*, 1 (37), 122-132.
- Vinogradova, E.YU., & Galimova, A.I. (2017). Principy formirovaniya korporativnoj informacionnoj sistemy dlya vnedreniya na rossijskih predpriyatiyah. *Izvestiya Ural'skogo gosudarstvennogo ehkonomicheskogo universiteta*, 2 (70), 111–123.
- Vodopyanova E.V., (2014). Europe in search of innovations. *Sovremennaya Evropa*, 2(58), 31-41.