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ASSESSMENT OF QUALITY OF ADAPTIVE MANAGEMENT OF INDUSTRIAL CORPORATION IN THE COMPETITIVE ENVIRONMENT

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Abstract.

In this article the existing contradictions in modern ideas of adaptive management of industrial corporations are considered. Differences of adaptive management from other approaches to business administration in the conditions of instability and unpredictability of external environment are identified. The relational concept of adaptive management is offered. Sravnenivayutsya approaches to the management of industrial corporations in terms of mobility and unpredictability of the environment. Formulated a consistent methodology of analysis and measurement of the level of turbulence of the environment. The analysis of the activity of development of JSC "Belgorie". After testing method results were obtained, which objectively show the perspective changes of product portfolio management to enhance action on adaptation of the enterprise to changing environmental conditions. The tools of an assessment of quality of adaptive management of industrial corporation, allowing to differentiate competitors on degree of flexibility of their market policy are described.

Keywords. Adaptive management, adaptability, industrial corporation, external environment, turbulence of the environment, development intrastability.

Introduction. Adaptive management arose in the 1970th as the approach to resources management which appeared to replace of traditional environmental management with his installation on planning and approving inevitability of uncertainty of live systems and need of training as a main goal and experiment as the main methodology. "Adaptive management and an assessment of environment" of K.S. Hollinga is considered the classical work which has laid the foundation of science [1]. It is focused on the quantitative analysis of results of experiments in the sphere of fishery and the wild nature. In the 1990th the concept of adaptive management began to be applied in social and political

and has pointed to communication between the contradictions arising in society and instability of development [2]. At

the present time the adaptive management is a set of the concepts and methodologies presented in different scientific

disciplines: systems of adaptive control in mechanical engineering, general quality management (TQM), research of

operations and methods of optimization, the theory of organizational training, the system analysis in ecology, etc.

The analysis of the existing researches in the field of adaptive management has allowed to identify the

incoordination of views on many positions.

First, different opinions concerning object of adaptive management have developed. In the western tradition adaptive

management is still better known as adaptive resource management (ARM, Adaptive Resource Management) and

more often researchers refer his content and methods to research of problems of environment, ecobalance, using

of natural resources. Adaptive management, according to B. Williams, is aimed to reduce uncertainty which imposes

restrictions for management of natural resources [3, page 1352]. At the same time, the methods developed for natural

ecosystems, algorithms and tools can't be postponed with the same ease for the enterprises. Therefore adaptive

management in a business environment is the separate scientific direction demanding development.

We will note that along with the idea of biospheric orientation of adaptive management which is definitely accurately

existing in foreign scientific works in relation to a business environment adaptability of the companies quite often is

studied. Adaptability of the enterprise as the concept was approved in the 1970th, designating ability of the company

to adapt of changes in external environment for ensuring the viability [4]. The researches of organizational

adaptability which have gained development in the 1960th were guided by the contingency theory and studied the

relations between the enterprise and its environment [5]. In the Russian tradition questions of adaptability are

traditionally taken up mainly in the field of biology, medicine, psychology, and adaptive management – in

information systems of management and in mechanical engineering. At the same time, the Russian scientists quite

actively develop methodology of adaptive management of the commercial enterprises, acknowledging the objective

possibility of application for their characteristic of property of adaptability and flexibility. At the same time often

adaptability is treated through characteristics of preservation of stability in market conditions [6, 7]. Secondly, use of

two terms ("adaptive management" and "adaptation") for reflection of administrative process of adaptation to changes

is noted. Adaptation is most often presented as process of adaptation, reorientation, ensuring viability, change of

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properties of the organization in response to change of operating conditions [8].The adaptive management (adaptive management) of the enterprise is defined as:

- realization of expedient options of acceptance and implementation of the balanced administrative decisions which are intended for creation of the mechanism of adaptation of the enterprises to the competitive environment;
- systematic interaction with external environment for identification and extraordinary response to atypical, uncharacteristic operating conditions.

In our opinion, process of adaptive management includes adaptation as a key resultant stage to which forecasting and the analysis of a situation precedes. It is possible to determine adaptive management as activities of the subject for monitoring, fixing of deviations in dynamics of development of external environment and in own functioning, and also by regulation (adaptation), control of efficiency of the taken measures.

Thirdly, in a number of foreign sources the emphasis in definition of adaptive management is placed that it is the process which is based on training: knowledge improves administrative decisions [9, 10, 11]. In other words, the purpose of adaptive management is not only achievement of the corporate purposes, but also training and as operating, and the operated systems.

Fourthly, there is no consensus concerning a source of changes. In economic science often adaptability is understood as reaction of the organization both on external, and on internal "irritants". Allowing similar treatment, all of us incline to idea about origin of the majority of the reasons of internal changes in external environment. Need of qualitatively new relation of industrial corporation to a surrounding situation, in our opinion, is caused by the fact that adaptive approach in management, being borrowed from biology, has to change idea of external environment, including her "ecosystem" of the company and, therefore, declaring transparency of the relations, trust in interaction as the basic principles of coexistence in the market. From here, not traditional business unit or the company, and all business "ecosystem" of corporation becomes unit of the strategic analysis. The relationship developing in her exerts critically significant impact on adaptability of corporation.

Fifthly, researchers of problems of adaptation of the enterprises treat it as reaction to already happened change of external environment. Need of modification of a trajectory of activity of industrial corporation according to the changing operating conditions is proved by many researchers. In particular, it is proved that the lag effect of behavior at a high variety and small predictability of an external situation becomes an obstacle to high-quality growth and fast adaptation [12] Meanwhile, we considered necessary to allocate in the course of adaptive management also

the actions directed to realization of the pro-active measures of adaptation connected with formation of stable economic relations. As justification serves, on the one hand, the fact of importance of processes of integration for the modern industry [13], and on the other hand, need of the account not only commercial, but also social aspects of activity of the enterprises [14].

Sixthly, it is necessary to specify critical differences of adaptive approach from the existing similar concepts. It is at first sight possible to track a certain similarity between adaptive and situational management. The law of a situation formulated in the 1920th says that different situations demand different knowledge therefore heads become the best because of compliance to requirements of the moment [15]. In the 1970th situational approach has received more accurate registration, having absorbed the principles of the theory of open systems, and explained properties of organizational structure with specifics of her adaptation by external and internal environment. Researchers have proved a number of the factors defining character of organizational structure. J. Vudvord [16] has described influence of technology on system of relationship "subordinate-head". T. Burn and J. Stalker [17] have allocated the organic and mechanical type of organizational structure applied depending on degree of stability of environment. P. Lawrence and J. Lorsh [18] have found out that in the large organizations each division has the environment that separates them even more and hinders the achievement of common goals. Later a follower of this approach accent a situatedness of the choice not only organizational structure, but also like the organization of production, leadership models.

The revealed distinctions in the administrative approaches actual in the conditions of uncertainty of functioning of industrial corporation, are systematized in table 1.

Table 1. Comparison of approaches to management of industrial corporation in the conditions of mobility and unpredictability of development of external environment.

| Criterion of difference | Situation management | Marketing management | Adaptive management |
|--|----------------------|----------------------|----------------------------------|
| Level of formalizability of an industrial corporation's reaction to external irritants | High | Medium | Low |
| Pertaining of an adaptive correction object | Internalenvironment | Internalenvironment | Internaland external environment |
| The prevailing character of management decisions | Operational | Strategic | Strategic |

| | | | |
|---|----------|-----------|------------------|
| Approach to the account of changing factors | Pinpoint | Segmental | Complex (system) |
|---|----------|-----------|------------------|

In the conditions of growth of unpredictability of the environment of a distant environment of the enterprise, increase in number of protointegrative associations when the importance of preventive measures of increase of stability of industrial corporations increases, we consider expedient specification and deepening of adaptive management on the basis of development of the relational concept assuming formation of theoretical and methodological approaches to creation of system of the effective business interactions providing stability of corporation and its business "ecosystem" in the conditions of high turbulence of external environment. In this regard we consider that:

- 1) it is necessary to consider adaptive management not only through a prism of the solution of operational tasks, but also, mainly, as a kind of strategic management in the conditions of uncertainty and mobility of environment;
- 2) it is expedient to allocate in adaptive management, along with jet mechanisms, pro-active responses to potential transformations of the business environment of corporation, basic of which we consider the measures directed to formation of the loyal partner environment;
- 3) formation and development of techniques of preventive adaptive management of the industrial enterprise are objectively significant, first, expansion of tools of jet adaptive management of corporation, including due to development of a technique of an assessment of quality of management in the conditions of unpredictability of development of the situation in external environment, secondly.

The relational concept of corporate management doesn't contradict preached in the west of an ecological orientation of adaptive management but only strengthens it. Considering that the ecology is a science about interactions of live organisms among themselves and with environment, we consider that the offered concept opens the new direction in ecology and economy which it is possible to call business ecology or relational ecology. The last as it is represented, has to deal not with the traditional resources limited in the nature, and with spiritual, partner resources which deficiency as we see, is shown in the world community. In the developed of relational concept adaptive management of industrial corporation is a set of administrative impacts on its internal and external environment for the purpose of reduction of deviations from the planned functioning, on the one hand, and preventive increase of adaptability to external transformations on the basis of creation of effective interactions with subjects of external environment, on the other hand.

Technique: The traditional model of adaptive management assumes development of administrative decisions on the basis of the accounting only of mismatches between expected model of development of object of management and its actual functioning. Insufficiency of such approach is connected with need not only to provide adaptation of industrial corporation to the changing operating conditions, but also to use such control lever as change of the environment of functioning. In this regard at an assessment of quality of adaptive management at the enterprise the approach considering not only ability of corporation to keep stability of performance of planned targets, but also a condition of external environment (figure 1) is offered. On the basis of the offered methodology it is possible to claim that quality of adaptive management of industrial corporation is defined: adaptation ability to external transformations, so, stability of functioning and preservation of dynamics of development;

- the competence of management which is expressed, in particular, in anticipation of development of the situation in external environment and directed by the achievable, coordinated, realistic purposes;
- Degree of turbulence of external environment of industrial corporation which can be used, in our opinion, as the correcting size: if during the estimated period external environment was mobile, then insufficiently balanced development of industrial corporation can be caused not by quality of adaptive management, but factors of a surrounding situation.

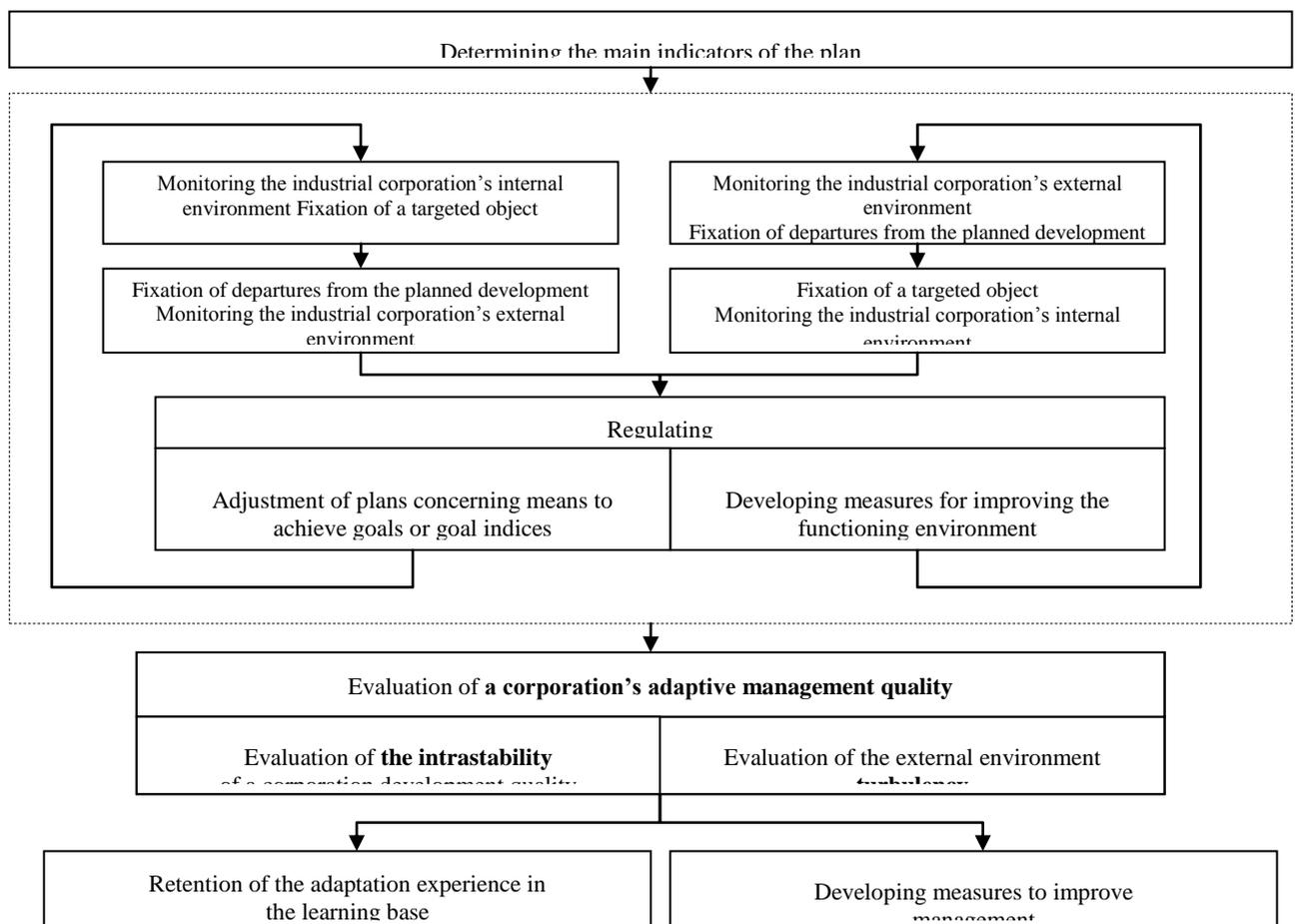


Figure 1. Scheme of jet adaptive management of industrial corporation.

These arguments are adduced to need to estimate two components of quality of adaptive management: Intrastability of development.

Main part. The offered scheme of an assessment of an intrastability of the corporation development is based on measurement of a divergence between the planned and achieved results on indicators, critically significant for key grocery groups of corporation. The assessment is made on the following stages:

1. Choice of general indicators of development of industrial corporation. As those we offer natural and cost the output and indicators have arrived.

2. Fixed of planned (P_{ij}) and actual values (F_{ij}) of I general indicators according to j the grocery directions. The matrixes are as a result formed:

$$\begin{pmatrix} P_{1i} & \dots & P_{1j} \\ \dots & \dots & \dots \\ P_{i1} & \dots & P_{ij} \end{pmatrix} \qquad \begin{pmatrix} F_{1i} & \dots & F_{1j} \\ \dots & \dots & \dots \\ F_{i1} & \dots & F_{ij} \end{pmatrix}$$

3. Measurement of a relative (percentage) deviation of the actual values from planned (d_{ij}):

$$d_{ij} = \frac{F_{ij} - P_{ij}}{P_{ij}} \cdot 100$$

The choice of relative, but not absolute deviations is caused by distinction of units of measure of general indicators.

The matrix of relative deviations is as a result formed:

$$\begin{pmatrix} d_{1i} & \dots & d_{1j} \\ \dots & \dots & \dots \\ d_{i1} & \dots & d_{ij} \end{pmatrix}$$

4. An assessment of an intrastability of development of corporation on the basis of averaging of relative deviations on j to the grocery directions:

$$\bar{d}_j = \sqrt{\frac{\sum_{i=1}^n d_{ij}^2}{n}}$$

quantity of general indicators of an assessment of stability of development.

The choice of average quadratic deviations as the generalizing indicator of an intrastability of development is connected with the fact that values d_{ij} can be both positive, and negative.

5. Calculation of an indicator of an intrastability of development of industrial corporation (B) on the basis of

weighing of the indicators characterizing the grocery directions (\bar{d}_j):

$$B = \sum_{j=1}^m \bar{d}_j \cdot w_j$$

$$w_j = \frac{V_j}{\sum_{j=1}^m V_j}$$

w_j – the importance coefficient (weight) of a relative deviation of development showing extent of influence of the grocery direction on all-corporate development, $j = 1, \dots, m$; V_j – revenues from j th the grocery directions; m – quantity of the grocery directions in corporation.

6. An assessment of an intrastability of development of industrial corporation in dynamics ($B_{dynamic}$):

$$B_{dynamic} = \frac{\sum_{t=1}^k B_t}{k}$$

B_t – an indicator of stability of development of corporation in a year of t , $t = 1, \dots, k$; k – number of years in the research period.

This indicator is measured as a percentage as, in fact, is an average on all industrial corporation a relative divergence of set of the actual estimates of indicators of activity and their planned values.

7. An assessment of quality of adaptive management of industrial corporation on the basis of an adaptability indicator

(A):

$$A = \frac{B_{dynamic}}{I_{turb}}$$

The assessment of turbulence of external environment is based on measurement of extent of change of the key macroeconomic, branch and regional parameters.

At the same time we understand a randomness of fluctuation of parameters of external environment of the organization, irregular on time, as turbulence.

The methodical device of research of turbulence is given in figure 2.

Approbation of a technique in the industrial corporation operating in food branch of the Belgorod region has allowed to receive estimates of stability of development in the grocery directions (table 2).

Conclusion.

Level of adaptive management of JSC “Belogorie” Confectionery make up:

$$A_{2012} = \frac{16,5}{1,138} = 14,5\%,$$

$$A_{2013} = \frac{16,17}{1,138} = 14,2\%,$$

$$A_{2014} = \frac{16,82}{1,138} = 14,8\%,$$

$$A_{2015} = \frac{12,59}{1,138} = 11,1\%.$$

For an interpretation of results of an assessment we have developed a scale (table 3).

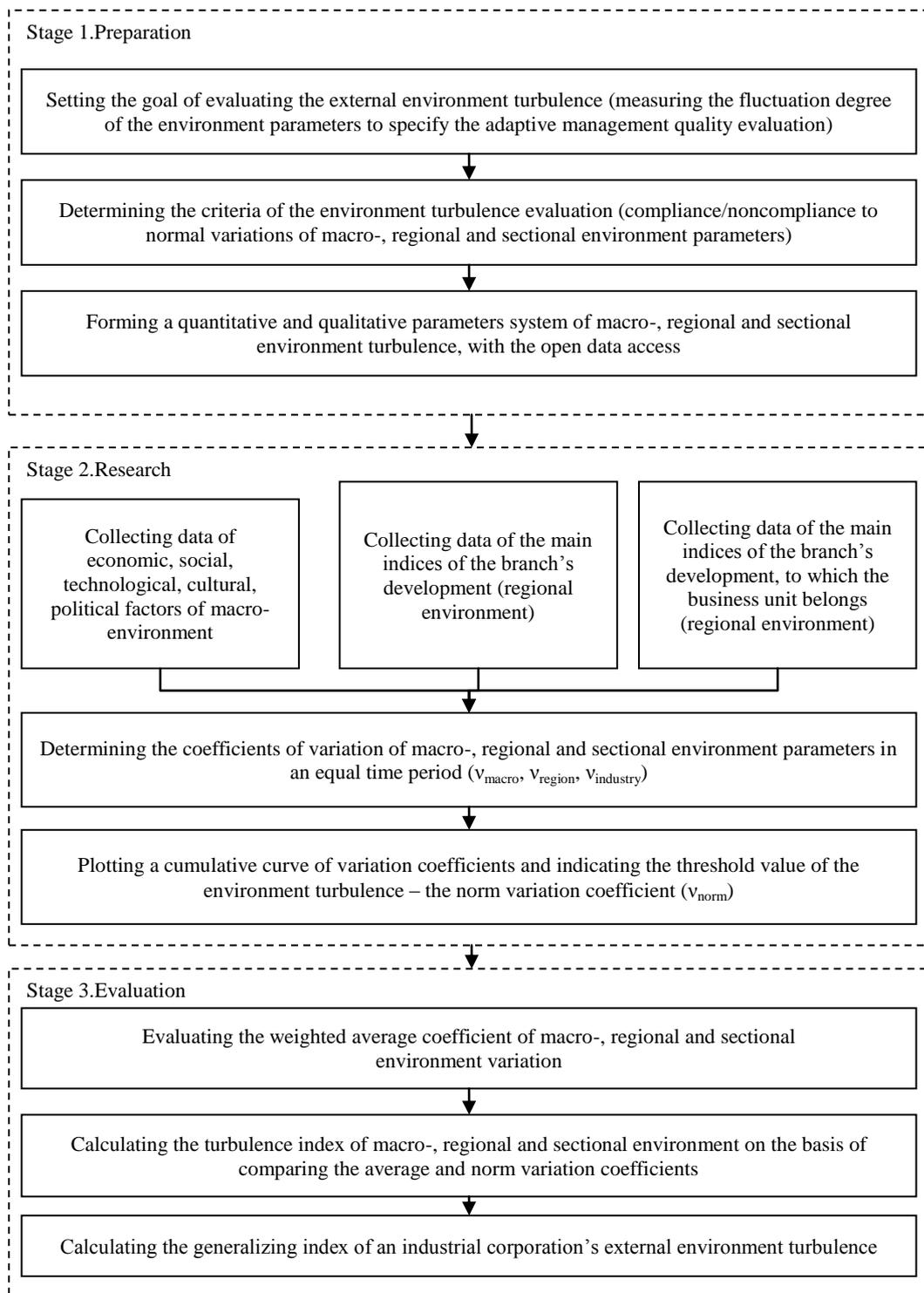


Figure 2. Sequence of the analysis and measurement of level of turbulence of external environment.

Table 2. An assessment of an intrastability of development of JSC “Belogorie” Confectionery in 2012-2015.

| Factors | Intrastability of development, % variation | | | | Weight (share of consolidated revenues) | | | |
|--|--|-------|-------|-------|---|------|------|------|
| | 2012 | 2013 | 2014 | 2015 | 2012 | 2013 | 2014 | 2015 |
| Butter biscuit | 37,94 | 21,52 | 47,30 | 30,90 | 0,15 | 0,12 | 0,08 | 0,06 |
| Glazed cookies | 4,49 | 8,12 | 20,93 | 17,90 | 0,22 | 0,20 | 0,17 | 0,17 |
| Cracker | 33,68 | 23,20 | 19,72 | 5,46 | 0,01 | 0,09 | 0,20 | 0,27 |
| Prolongcookie | 9,45 | 20,75 | 5,17 | 12,46 | 0,10 | 0,08 | 0,08 | 0,04 |
| Sugar cookie | 17,53 | 13,02 | 9,46 | 9,16 | 0,41 | 0,36 | 0,32 | 0,28 |
| Sandwiched wafers | 1,96 | 10,73 | 9,78 | 11,20 | 0,02 | 0,04 | 0,05 | 0,04 |
| Complex cookie | - | - | 7,64 | 18,63 | - | - | 0,04 | 0,04 |
| Mineral water 5,0 л. | 3,61 | 8,00 | 20,70 | 16,98 | 0,01 | 0,02 | 0,02 | 0,03 |
| Mineral water 18,9 л. | 44,40 | 19,71 | 35,79 | 55,98 | 0,01 | 0,01 | 0,02 | 0,03 |
| Mineral waterbottling | 19,52 | 22,30 | 14,39 | 14,01 | 0,02 | 0,02 | 0,02 | 0,02 |
| Quass | 8,65 | 46,22 | 25,44 | 20,46 | 0,04 | 0,04 | 0,02 | 0,02 |
| Intrastability of the corporation development | 16,50 | 16,17 | 16,82 | 12,59 | x | x | x | x |
| Intrastability of the corporation development in follow-up | 15,52 | | | | x | x | x | x |

Table 3. A scale of levels of adaptive business management, % variation (by results of pinquiry of experts).

| Normal, natural | Acceptable, maintaining control of corporation | Problem, confirming insufficient adaptation to changes of external environment | Critical, caused by significant gaps between internal and external environment of corporation | Inadmissible |
|-----------------|--|--|---|--------------|
| 7 | 15 | 22 | 31 | 40 |

In general for the four-year period the level of adaptive management made up: $A_{2012-2015} = \frac{15,52}{1,138} = 13,6\%$, that

testifies to the level of adaptive management accepted, keeping a coordinability of the studied industrial corporation and compliance to development of external environment.

Conclusions.1. From the moment of the emergence in the last third of the 20th century adaptive management has turned from approach to management of limited natural resources into the concept of management of any social and economic systems in the conditions of inconsistent and unstable development. A frame of reference, making the

theory of adaptive management, it is impossible to consider settled. The conclusion is drawn that adaptive management of industrial corporation is activities of the subject for monitoring, fixings of deviations in dynamics of development of her external environment and in functioning of the internal environment, to regulation (adaptation), control of efficiency of the taken measures. In this sense adaptation is considered as one of processes of adaptive management designating actions for change of parameters of an economic entity.

2. Unlike the traditional view of adaptive management assuming reaction to already happened change of external environment we believe that it is objectively necessary to allocate the actions directed to implementation of proactive measures of adaptation. High uncertainty, complication and instability of external environment lead to the fact that the traditional methods of formation of strategy developed for more predictable conditions of an external environment stop being successful. Against the opinions which are claimed in ecology concerning unsuccessfulness of forecasting of natural processes methods of intuitive planning in adaptive management of corporation aren't accepted. And uncertainty increase only emphasizes importance of development of preventive mechanisms of adaptive management, one of which is formation of effective business interactions.

3. Adaptability of industrial corporation in the market environment is caused both by efficiency of administrative decisions, and a state and variability of external environment. It is offered to unite numerous characteristics of external environment (dynamism, speed, complexity, uncertainty, heterogeneity, an orientation of changes) concept of turbulence which is treated as a randomness of fluctuation of parameters of external environment, irregular on time.

4. At an assessment of quality of adaptive management of industrial corporation degree of turbulence of external environment is used as the correcting size. The logic of this conclusion is connected with the assumption that if during the estimated period external environment was mobile, then insufficiently stable development of the organization can be caused not by quality of adaptive management, but factors of a surrounding situation.

5. The technique of an assessment of an intrastability of industrial corporation development is based on measurement of divergence between the planned and achieved results on indicators, critically significant for key grocery groups of corporation (natural and cost output, profit).

Approbation of a technique in the industrial corporation operating in food branch Belgorod, area, has allowed to receive estimates of balance of development in the grocery directions and to formulate offers on increase in its intrastability.

6. The assessment of quality of adaptive management of corporation is made on the basis of correlation of an intrastability of development of corporation in dynamics and an index of turbulence of external environment. For determination of standard values of level of adaptive management (A) survey of experts is conducted and it is established that at value $A > 15$ points, the level of adaptive management has to be recognized as problem. Approbation of a technique has shown an objective opportunity to draw conclusions concerning prospects of change of a product portfolio and efficiency of administrative actions in the field of adaptation of activity of the enterprise to the changing environmental conditions.

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