
Economic sciences
Экономические науки

UDC 334.758.4:303.823-057.17

**COMPREHENSIVE SYSTEM FOR DYNAMIC STABILITY
AND RISK MANAGEMENT IN THE HOLDINGS**

M.G. Lazareva, Doctor of Economics, Professor
National University of Kyiv-Mohyla Academy (Kiev), Ukraine

***Abstract.** Within the framework of the turbulent external environment and complex interrelations between the internal elements of a holding system, the issue of creating an adequate mechanism for a holding system support under conditions of stability and risk minimization, becomes particularly topical. **The research objective.** A comprehensive system formation for dynamic stability management within the holdings in view of the risk management system elements. This paper proposes a combined system for dynamic stability and risk management in a holding. An interrelation between the elements of a dynamic stability management process, i.e. a management process, a management impact formation and algorithm of macro-planning are considered. The indicators of key risks and adaptability are proposed. An example of degree evaluation of the impact of the managing company units of a holding on its adaptability is examined.*

***Keywords:** holding, dynamic stability management system, dynamic stability, operational risks, adaptability*

Urgency of the research. The holdings¹ play a leading role in a modern economic system. Often the large integrated consolidations are not only GDP formative, but also have influence on a competitive ability of country, its stability and economic resilience. For domestic holdings, the issue of stability is of high priority, as they shall compete with larger and more experienced companies with yearslong history.

Problem statement. Resilience of an economic holding – a system can be defined as an ability of such system to retain its key parameters within a specific area of stability in a state of strategic and tactical objective accomplishment by a holding in case of any external or internal disturbances. It is referred to various external or internal disturbances related to uncertainty of the current events and the risks that may occur as a result of these events. A holding shall both maintain its key parameters at a specific qualitative level and develop itself. Said differently, a vector of development is added, so it is reasonable to speak about a dynamic stability of the company.

It is essential to create a dynamic stability management system for a holding, which could provide a high level of reliability to stand up against the most of external and internal risks using the quick response mechanisms and preventive actions. Availability of such mechanism provides a high level of adaptability for a holding like a system.

A review of recent papers. Scientists' interest in stability is rather strong. Every author-researcher considers stability from different perspectives that, finally, allows forming gradually a whole idea of this concept. The issue of comprehensive system stability through the lens of economics shall be considered within the framework of an interdisciplinary approach. A major contribution to development of this concept was made by the scientists worked in different areas of expertise: M.I. Setrov [14], M. Mesarovich, Y. Takakura [9] (the general system theory), V.A. Ostreykovsky [11] (the theory of disasters), N.N. Moiseev [10] (the mathematical physics) and others.

The researches are conducted by the following local academic economists: M.O. Udovichenko [16], A.P. Andreychuk [1], M.V. Kravchenko [7] and others. M.V. Samosudov investigates stability regarding the object in view and proposes a management algorithm. Under this approach, the subsystem target functions are held out and there is an ability to perform an analysis or synthesis of resources [13]. A similar problem, but, in mathematical language, solved by means of liner programming, is addressed by N.V. Zubanov [6]. N.V. Zubanov considers stability for cases of target function parameters variability, if the other parameters are constant.

S.N. Anokhin defines an "economic stability" as a balanced state of production enterprise, when the economic and managerial solutions regulate the key factors of an enterprise state of stability: production, finances, staff and strategy within the prescribed limits of risk [2].

A.V. Usov and E.N. Goncharenko consider that a management process for economic system stability shall be based on a process of predicted characteristics optimization. Under conditions of uncertainty, a management system shall be responsive to both quantitative and hard-to-detect heuristic information [18].

In the opinion of the authors, stability acquires the dynamic aspects of behavior of social and economic system. Thus, Y.M. Suleymanova points out that an enterprise economic stability means a dynamic category related to enterprise

state transition over time, and it stands for its ability to restore a balance [15, p.54]. According to definition given by N.G. Doloshko, enterprise stability is a dynamic, comprehensive, complex and versatile concept that has many approaches to definition, as well as covers a wide range of objects depending on a specific system [5]. A.G. Baranovskyi and A.P. Trenikhin claim that a dynamic stability provides negative feedback between the structures elements intended to restore a balanced state of a system [4]. M.F. Balakin and E.Y. Lyushin point out that a dynamic stability means a property of organization assuring self-regulation of the development processes, that retain stability even in case of substantial changes in external conditions, giving an advantage over organizations that operate in a static way [3].

Uninvestigated parts of general matters defining. There is no consensus of opinions among the scientists on a concept of dynamic stability of a firm – a system. Its definition is only at the stage of development.

A risk management system has gone mainstream in practical activities of financial institutions. In recent times, a formation of system for operational risk management in the companies of non-financial sector, generally as a part of Corporate governance code (refer to [17]), becomes more and more crucial.

The comprehensive system for dynamic stability management is at the stage of formation. It seems appropriate to combine several provisions of the dynamic stability management system and the risk management system in order to achieve more well-balanced managing process for adaptation mechanisms of a firm – a system.

The research objective. The objective of this paper is a formation of comprehensive system for dynamic stability management in the holding, taking into account the elements of a management system for operational risks and the risks caused by dynamic stability factors.

Statement of basic materials. In this paper, a "dynamic stability management system" (hereinafter refer to as the "DSMS") stands for a complex of approaches and methods of impact that provide a support for set position (balance) or its transfer into a new quality (development). This definition can be applied to any firm. For this paper, we have chosen a holding as an object, so the further considerations are related to this type of organization. Therefore, a dynamic stability for a holding includes two components: stability and development of a firm – a system. These two elements are implemented using the following factors of dynamic stability²: the sustainable business portfolio, quick response mechanism to threats and other disturbances caused by internal or external environment of a firm, well-balanced property relations, applied and effective business processes, sustainable structure of a group of companies and complex system for decision-making.

This is a complex and quite complicated mechanism of monitoring, gathering and processing of information on internal and external processes related to a holding – a system operation, formation of patterns for the states of a firm and an environment, as well as of a forecast function to determine a vector of firm development and formation of the set of instruments for quick response. For the aforementioned factors of dynamic stability, a process of formation of the quick response mechanisms can be performed according to the deviations, i.e. a system of patterns for response to one or another deviation for recovery or transition into a new quality can be generated for any deviation from a standard. Certainly, all case scenarios can not be foreseen. However, there is a quite conventional set of the causes for the deviations from the rules and standard responses to such deviations. They shall be used as a reference. This does not provide a guarantee of a complete success, but can sufficiently cut time for response, if the response patterns are available.

In our opinion, each of these factors has an influence on a holding state at any time. Certainly, there are many other factors impacting a firm stability, but the determining factors are the system building blocks. A quality of their placement affects directly the performance of a holding – a system as a whole. Availability of the specified applied building blocks is a necessary but not sufficient condition for dynamic stability of a holding – a system.

As a general matter, a management process is divided into the "analysis-planning-control" processes and is closed by the feedback loops returning again to the first stage ("Analysis") etc. Schematically, a system for dynamic stability management in a holding can be presented as follows (refer to Fig.1.). The DSMS can be successfully implemented in any firm, not only in a holding. The determining factors for this system can be represented as an absolutely different combination of such factors in comparison with those listed by the author and will depend on the results of micro-planning. Consequently, the potential response of a firm – a system to the disturbances caused by internal or external environment will be projected for the selected set of determining factors. The proposed list of factors is a basis for any holding and firm. Virtually, only the one factor is variable for a firm. This is a sustainable business portfolio, which is modernized to be a sustainable product portfolio for a firm. The DSMS is considered to be a universal model for a firm management under conditions of external environment uncertainty. This system demonstrates good practical results while developing the companies: when a company or a group of companies undergoes a stage of transformation and establishment of procedures for their activities.

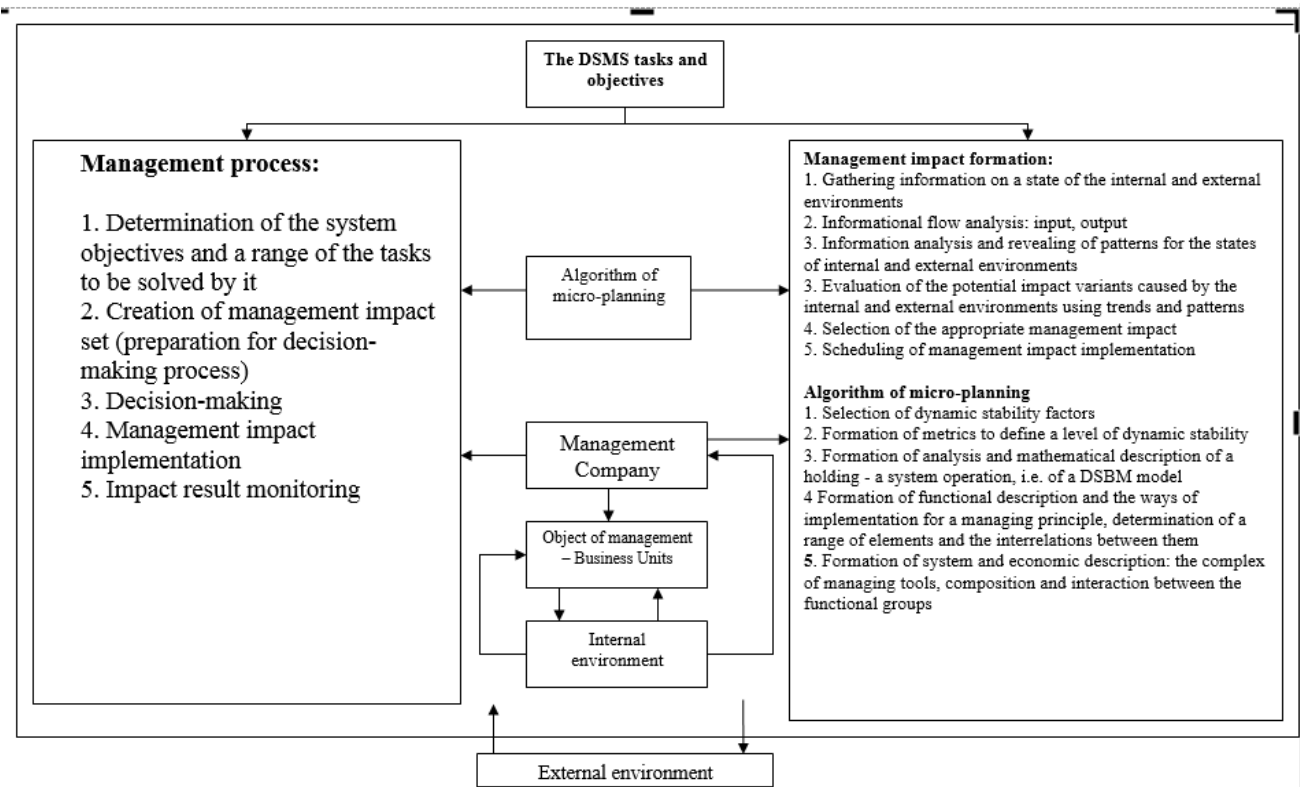


Figure 1. The DSMS within a firm: basic representation

The DSMS is perfectly integrated into a firm management system, supplementing it with the required elements (refer to Fig. 2) and creating a complex management system based on cost approach – the DSMS³.

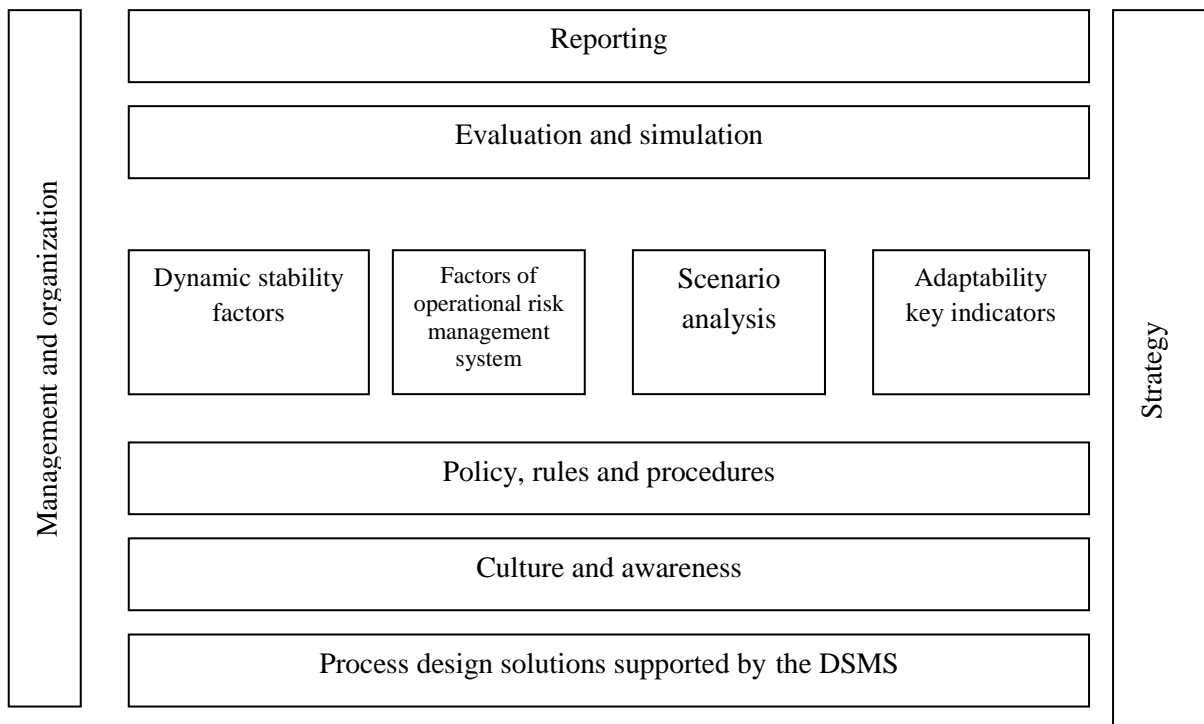


Figure 2. An example of dynamic stability management system (a sample provided by IFC is shown in the figure [12, p.27])

In order to provide an appropriate operation of dynamic stability management system, it is reasonable to integrate it with a risk management system for a holding due to a strength of relationship of these systems: both the DSMS and the risk management system are intended for operations with the losses of a firm – a system, caused by unexpected events of probabilistic nature. To achieve that, it is proposed to consider a group of risks related to the factors, which have a great influence on a dynamic stability, as namely they provide the benefits of a holding, as a system and, finally, define a competitive ability of a group of companies:

1. A risk of dynamic stability loss due to organization of a decision-making system within a group of companies. It is referred to a balanced combination of individual and corporate decisions (including a use of internal markets of decisions and other system instruments for decision-making support due to collective intelligence application) within a company. We gave a conventional name to the model's factor that has an influence on stability – a decision-making system. In case of deviance of one or several components from a standard, there is a risk of dynamic stability loss.

2. A risk of dynamic stability loss related to insufficient quality, lack of or partial operation of business procedures that are the uniform standards of activities.

3. A risk of dynamic stability loss related to the conflicts between the owners caused by areas of responsibilities and authorities of the partners that are not regulated and/or documented.

4. A risk of dynamic stability loss related to lack of or inappropriate separation of the areas of responsibilities according to the management levels (unbalanced organizational and operational structure): relationship between the owners and the board level, between a managing company and the subsidiaries etc; between an inappropriately designed functional structure and the unrecorded rules of interaction between the persons and authorities, who make the decisions (lack of responsibility).

5. A risk of dynamic stability loss due to unbalanced business portfolio⁴ and/or to inappropriate portfolio management. The author conducted numerous years long researches of the business portfolios and came to a conclusion that a sustainable portfolio shall include the businesses in good operating condition that are being developed during a period of stability, as well as the businesses that are perfectly being developed and operate during a downturn (such businesses may be less profitable during the stability periods, than during the downturns). A ratio shall be close to the golden ratio, i.e. to $\frac{\sqrt{5}-1}{2}$.

6. A risk of dynamic stability loss related to a lack of or inappropriate operation of the quick response mechanisms to the internal and external disturbances.

A risk management system is mostly targeted at elimination of risk consequences, as a philosophy of business provides a principle of unpredictability of the systematic risks. The process of their management is ignored due to the complete unpredictability of the latter. I.e., virtually, an issue of prediction is considered in the last turn. The activities of a modern system for dynamic stability management shall be also aimed at loss minimization caused by the external and internal disturbances, but shall mostly be targeted at creation/practical implementation of five key levers and regulators of the preventive actions according to the main elementary components of the proposed DSMS for a holding (Fig. 3):

- a) risk and threat identification;
- b) risk and threat modification;
- c) continuous monitoring of risks and threats;
- d) risk and threat control and audit;
- e) integrated management: response mechanism activation.

<p>Identification of risk and/or stability loss</p>	<ul style="list-style-type: none"> • Identification of risks and structuring of information on risk event losses • Description of potential losses and preventive measures for high risk areas • Distribution of information via internal communication channels • Detection of potential loss of stability • Implementation of a quick response mechanism
<p>Risk and dynamic stability evaluation</p>	<ul style="list-style-type: none"> • Basic instruments for risk evaluation: the RCSA, reports on incidents and errors – risk indicators: KRI (Key Risk Indicators) • Selection of general and local indicators of adaptability (dynamic stability) • Simulation of case scenarios and fundamental analysis of modern business processes • Coordination of the instruments with a deviation management technology
<p>Continuous monitoring of risk and dynamic stability factors</p>	<ul style="list-style-type: none"> • Risk tendency analysis • External environment analysis: tendency detection, search for new patterns • Internal environment analysis: tendency status detection • Tendency simulation for "sliding mode" environment • Formation and use of alarm information technology
<p>Control, audit and minimization of deviations from the key parameters</p>	<ul style="list-style-type: none"> • The results of policy and procedure implementation • Regular internal/external audit • Costs and benefits of the risk minimization alternatives • Costs and benefits of business development alternatives for dynamic stability retention
<p>Integrated management</p>	<ul style="list-style-type: none"> • Integration of data on management process tendency to the risks • Management of tendency to risks and dynamic stability • Integration of managerial communication at two levels: subject and process • Development, adaptation and use of a range of task-oriented instruments.

Figure 3. The components of a comprehensive system for dynamic stability and risk management in a holding system (author's development)

A fundamental principle built in the DSMS for a holding is as follows: one always has a time for preliminary actions to ensure protection against the external/internal disturbances, including downturns. The downturns are always predictable. One can always detect the signs of upcoming breakdown virtually of any scale. A response to the most of breakdowns is quite foreseeable. Even a time of response of one or another group of persons and organizations can be calculated with a probability of more than 80 %. This requires highly skilled specialist to be involved, as well as time for implementation and, accordingly, the financial costs, but when a structure is formed, it shall provide a firm with dynamic stability and enable to develop and apply the strategies of development, but not of survival (today the most of companies use this strategy in the similar situations) during a period of downturn. The analytic experts who analyze the responses to the impact of external environment shall form a pattern system: standard responses to the ongoing events (e.g., to the downturns). Each pattern shall include the specific features of crisis-like phenomena and the potential points of reference. For example, in case of downturn in Ukraine: while there is a globally unsolved issue of geopolitical positioning of the country at a worldwide scale, there will be a threat of policy alteration virtually at all times in any direction. However, this threat is implemented by means of gradual steps due to a slow response of economic system. There were no simultaneous market disasters and price collapses (in national currency) in case of such events. This means that it's quite realistic to form own behavior strategy in advance (prior to the beginning of the process of situation degradation) using the patterns that describe a behavior in a crisis environment defining a time of response. To achieve that, a series of actions shall include, for example, a system of long-term contracts. It is referred not only to the consumer contracts, but also to the contracts that allow hedging the exchange and credit risks (forward, futures etc.). These instruments are rarely used in our country, as the forward prices are always higher than the spot prices indicated in these contracts. There is no risk hedging culture in Ukraine yet. This is evidenced by poorly developed insurance market and there is virtually no market of derivatives. The business owners only begin to understand a reasonability of use of the modern instruments for risk minimization. The most of companies use the short-term contracts, whereas the long-term contracts can guarantee loss minimization or apply the derivative financial instruments. Generally, the up-to-date instruments are used only by the public companies.

A sustainable application of the instruments used for stability adjustment according to the factors with the instruments of a risk management system, as well as creation of a system with reserve is crucial for a dynamic stability system. A sustainable portfolio assures stability during the periods of downturn due to its structure, as not the all businesses

response similarly during a downturn: several businesses even bring the higher incomes (for example, production of eggs or meat of broiler chicken) during these periods. In other words, the DSMS provides, among other things, a schedule system to avoid crisis-like phenomena and catastrophic events, as well as to overcome their consequences. A process of avoidance of the crisis-like events is focused on reducing the threat of their occurrence prior to it (preventive actions). For this purpose, a quick response mechanism has been developed and is used.

If a prediction of catastrophic event failed, an activation of mechanism to overcome the consequences of these events is required. Here it is referred to activation of mechanisms of the conventional risk management system. This mechanism allows for recovery of critically important functions after a crisis event. As a rule, this includes natural calamities, man-made disasters and accidents that are hardly predictable.

However, an account must be also taken of the following fact: in contrast to a risk management system, a dynamic stability management system covers all activities of a holding laying in factors that define this dynamic stability. Let's attest the following: a combination of these systems into a single architecture can help to achieve a high performance, by increasing significantly a level of predictability of external environment behavior and, accordingly, a level of company group adaptability virtually to any kind of internal and external disturbances. Fig. 3 demonstrates schematically the components of the comprehensive DSMS, integrated with an operational risk management system.

The adaptability indicators are developed for each factor of a dynamic stability and a group of risks and serve as the measuring instruments for each factor of dynamic stability and separate types of risks. Let's consider an example of such indicator forming for a holding. The key adaptability indicators are evaluated for each unit of managing company, as well as a degree of the unit's impact on adaptability value. The example of such evaluation is shown in Table 1, suggesting that a uniform standard for dynamic stability management is provided for a holding. This is a document set that provides the descriptions of all rules, procedures, methods etc. In addition to the aforementioned, it should be noted that for each affiliated enterprise the following steps are taken: a measurement of separate adaptability indicators according to the dynamic stability factors, as well as a formation of the instruments and of a management technology for the enhancement of these indicators.

Table 1

Example of degree evaluation of the impact of the managing company units of a holding on its adaptability*

Org.elements\Factors	Portfolio sustainability	Business procedures	Property relations	Sustainable structure	Response mechanism	Decision-making system	Total
Owners	H	L	H	M	H	H	H
Board level	H	H	L	H	H	H	H
Corporate development management	M	M	H	H	H	H	H
Legal bureau	M	L	H	M	M	M	M
Financial administration	L	M	L	L	M	M	M
Facility department	L	L	L	L	L	L	L
Accounting department	L	L	L	L	L	L	L
Innovation center	H	L	L	L	M	M	M

where, if the adaptability value is:

$K_a \leq 0,38$, a low degree of influence on adaptability level is assigned – L;

$0,39 \leq K_a \leq 0,62$, a medium degree of influence on adaptability level is assigned – M;

$0,63 \leq K_a \leq 1$ a high degree of influence on adaptability level is assigned – H.

Source * Developed by author

Degree evaluation of the impact of the managing company separate units on a specific factor of dynamic stability is defined by expertise. To achieve that, one may use both an expert evaluation system and the internal markets of decisions.

A uniform standard for dynamic stability management is provided for a holding. This is a package of measures accompanied by the appropriate document set that provides the descriptions of the all rules, procedures, methods etc. For each enterprise, the following steps are taken: measuring of separate adaptability indicators according to the dynamic stability factors, as well as creating a strategy to enhance these indicators. For example, for the holdings that have different partners for each business, it is reasonable to set an indicative value according to the "property relations" factor for each enterprise. A similar situation is with the business procedures. In practice, the following situation often occurs: the business procedures (if the uniform standards are available) are implemented with different speed at different enterprises, so it is important to evaluate an adaptability indicator according to the "business procedure" factor, separately for each enterprise of a holding. These values can serve both as the indicators of actual state and the targeted adjustable indicators. At that, it is possible to create a range of values to permit deviations from a specific indicator in any way.

Conclusions

Dynamic stability management system covers all activities of a holding enclosed in the factors that determine a dynamic stability of the group of companies: the sustainable business portfolio, well-balanced property relations, well-organized business procedures and current efficient system for decision-making. A combination of dynamic stability management system and risk management system can help to achieve high performance, by increasing a level of company group adaptability virtually to any kind of internal and/or external disturbances.

A management process for a comprehensive system of dynamic stability and risk provides the following stages: determination of the system objectives and a range of the tasks to be solved by it, creation of management impact set (preparation for decision-making process), exercising a managerial influence and the impact result monitoring.

The components of a comprehensive system for dynamic stability and risk management are as follows: identification of risk and/or stability loss, risk and dynamic stability evaluation, continuous monitoring, control, audit and minimization of the risks and adaptability, integrated management.

A key indicator system is created for a stability and risk management system depending on frequency, seriousness and degree of influence on a system.

Practical application of the separate elements of the comprehensive DSMS gives the excellent results. It is referred to the separate elements, as the system is under development and a part of its components is not developed enough both in theoretical and applied variants. The positive practical results give ground to a conclusion that the further development of the DSBM (in which the DSMS is included), as a separate management trend is reasonable.

Notes

¹ In this paper, a "holding" stands for a group of companies managed from a single center.

² These factors were distinguished by the author in the course of years long investigation of the groups of companies managed from a single center. Refer to [8].

³ As the DSMS features a quite complicated and complex mechanism, only its separate components will be considered within the framework of this paper.

⁴ In this paper, a "business" stands for a business area of a group of companies combined according to an industry type. It can include one or several firms. For practical purposes, such group is interpreted as SBU – a strategic business unit.

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