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## **ASPECTS OF CRISIS MANAGEMENT FOR INNOVATION ACTIVE ENGINEER ENTERPRISES**

### **Introduction**

One of the most problematic aspects and the establishment of effective means of improving performance innovation is not only government policy but also the activities of industrial enterprises of the national economy, as they are a powerful carrier of innovative activity: a source of a significant number of innovative solutions and innovative ideas, organizational and marketing innovations, commercialization and transfer of innovation.

One way of creating the company effective management system is the use of innovative approaches to crisis management system, which enables the transfer of its management to a higher level. There is a need serious methodological assistance in terms of crisis management, so the subject is relevant and is of great practical importance.

### **Review of recent research and publications**

The study of the economic growth and enterprise search capabilities out of the crisis is devoted to research of many scientists and economists, including O. Donets, N. Rekova, A. Tkachenko, A. Tereshchenko, Yu. Prokhorova , L. Sitnik and others.

The problem of developing measures to enhance innovation activity from a position of crisis management now studied by scientists and practitioners such

as V. Vasilenko, V. Heyts, N. Krush, I. Kryvov'yazyuk, D. Malashchuk, D. Senatorov, et al.

### **Problem definition**

Literature review enables to say that recently there are many publications devoted to innovation and innovation, as well as aspects of crisis management positions ensuring innovation development because of their importance for individual enterprises and the country as a whole is undeniable.

However, the question of innovation management companies in unstable economic conditions remains poorly understood, in addition, there are significant differences in the approaches of researchers to the selection tools of innovation activity of enterprises in a crisis.

### **Research Methodology**

To achieve the objectives of the article used general scientific and special methods of scientific knowledge. In particular, methods such as dialectical, logical, method of analogies, generalization of abstraction, comparative analysis; method of analysis and synthesis, systematic approach; methods of economic and statistical analysis, comparison; extrapolation methods, expert assessments, economic-mathematical modeling; logic synthesis method. Information base of research are: laws and regulations, methodical and instructional materials ministries, international organizations, the State Statistics Service of Ukraine, state of the bankruptcy, domestic and foreign scientific publications, financial statements engineering, materials on the Internet.

### **Definition of work objectives**

Engineering enterprises are the systems forming the structure of the national economy. Currently, the share of enterprises in this industry volume sales of nearly 15%. They operate 21% of the total employed population. Besides, there are more than 22% of all fixed assets and almost 16% of current assets. In addition, according to analytics and statistics, machine building are the most active in terms of innovation activity. Among all innovation active enterprises share engineering industry is about 30% of all enterprises.

Mechanical engineering is leader of the fall in exports in the 2013-2014 biennium. Total exports of engineering industry in 2013 amounted to USD 10.3 billion against USD 12.98 billion in 2012 recorded decline in exports at 20.6%. Most export transport engineering decreased - by 28%. First of all, this is due to significant reduction in the supply of wagons and locomotives to Russia - 40%, making the Ukrainian company sustained a loss 1.64 billion USD. Added weight and reduced aircraft delivery to Russia - 66%. Ukraine received less from exports of air transport 612 million USD. At the 5% reduced exports Equipment

Industry. A slight positive growth in exports can be considered handling equipment (+ 30%), equipment for material handling (+ 15%), engines (+ 9.8%).

Imports of engineering goods decreased by 13.9% to 17.75 billion USD, but these products still occupy second place (after energy) in the structure of commodity imports. Significant decline was the import of equipment for agriculture and food industry (-30.7%), cargo (-13.5%) and cars (-7.8%) vehicles, engines (- 13.3%), pumps (- 7.1%).

Analysis of machine-building enterprises shows the same trend over the years as the entire industry. However, the share of machinery in the structure of industrial production ranges 8,3-13,7%, which certainly does not reach the level of developed countries, where the share of machine building industry, usually between 25-45% (Fig. 1).

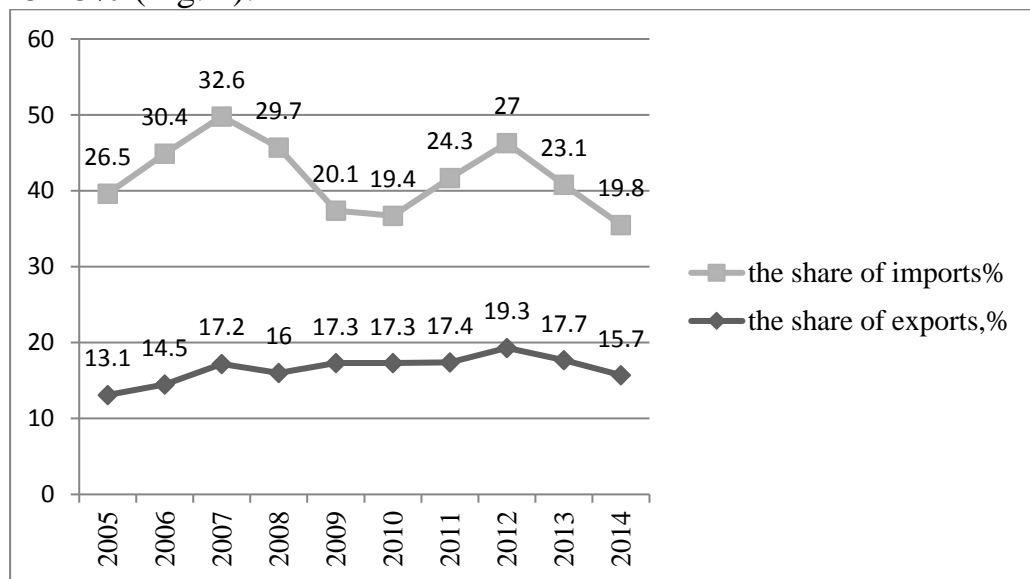


Fig. 1. The share of exports and imports of engineering goods in total Ukrainian exports and imports

Source: author constructed based on [5, 10]

During this period was relatively stable production structure types of engineering products. The largest share traditionally occupied by the production of vehicles and equipment, the lowest - Manufacture of electrical, electronic and optical equipment.

The analysis of engineering innovation active enterprises in 2005-2014 years. Shows that the number of innovation-active businesses increased, while there was a decline in the share of innovation active enterprises of machine-building industry in total. Note that the share of innovation active enterprises of machine-building industry in total is on 31.12.2014 - 17.3%, compared to 2005, where the share reached 33.03%, the level decreased almost in 2 times.

Despite a slight revival of innovative activity of domestic industry and mechanical engineering, in particular, for the years 2011-2012, in 2013 the number of innovation-active industrial enterprises decreased again and reached 1715 enterprises, including innovation active enterprises numbered 497. Despite

Engineering this level of innovation engineering companies can hardly be called satisfactory, because the need for innovation in most of them met through imports of technology and equipment, rather than by creating your own innovation.

The main reason is lack of available funds and circulating assets leaching, leading to obsolescence range of engineering products, which in its technical and ergonomic performance, the level of quality does not meet foreign counterparts and has a much shorter period of operation. After all, the main source of financing innovation in engineering, as well as the industry as a whole, are own funds of enterprises, which make up a crucial part of the costs of research and innovation activities. Of the total funding of innovation in the amount of 3.079 billion. UAH in 2014 building enterprises own funds amounted to 2.184 billion. UAH [9]. Nevertheless, such a strategy of innovative survival choose only one. The greater part of engineering enterprises from the high cost of credit and low investment climate has to abandon the innovative development model, actually choosing the path loss of productive capacity and competitive position in the global market.

In order with drawal engineering enterprises of the crisis is necessary to conduct a systematic analysis of the company as a whole and determine at which stage of the crisis it is. In the case of when the diagnosis of these problems the company must immediately apply the tools of crisis management.

Based on the data in the enterprise management system must change from traditionally anti-crisis to help companies put in place following organizational and economic mechanisms that would get out of the situation with minimal losses.

In this way, due to the crisis situation in the enterprise engineering experience various kinds of problems that must be addressed using the tools of crisis management to help change the direction of their activities and withdraw from the situation that has arisen.

One of the directions of crisis management in innovation active enterprises is the use of scenario-based approach to management. It should be noted that the criteria for improvement largely determine the scope and intensity of the action taken.

According to the scenario of crisis process, the company needed a systematic identification of "narrow places" in the implementation of anti-crisis intentions of the company and formation of the basis of the ruling anti-crisis bank information. To this end, put in place a mechanism of crisis coordination, through which the in a systematic comparison of necessary and sufficient potential viability of the company with the resources that are at present, and possible and acceptable risk.

It is known that the optimality of the decisions related to the viability of enterprises, largely determined by the level of awareness of management is actually existing and impending problems entity. After all, ignorance leads to

decisions that contain a particular share of the risk of non-receipt of the return, which would be the introduction of planned resources. If we take into account the main objectives of the company, is at risk should understand the sudden emergence of the expected profit, leading to losses. If these losses would be too high and will be sustained, the company eventually will stop their activities or lose its independence.

The risk factor as a result of insufficient knowledge of the decisions taken in respect of a particular situation, market conditions plays an important role. In developed countries, this is due to the increasing uncertainty of market behavior for a number of reasons:

- danger of aging as much as manufacturing industries due to large-scale and depth of technological change;
- growing consumer demand is not predictable due to the increasing instability inclinations and preferences of customers;
- amount of time that is constantly increasing, research and product development, recently produced, while reducing its life cycle [3].

The set of methods and means of coordination weighted sized resources are introduced and sent to the opposition of destabilizing phenomena with the risk of possible losses, form a crisis coordination mechanism that operates within the Bank's anti-crisis information, formation and replenishment which is an important factor of crisis process in the enterprise.

The sources of anti-crisis information`s bank is, on the one hand, the analysis of external environment, identify the associated negative trends on the other - the analysis of potential of the company and its previous economic activities, identifying negative domestic trends, strengths and weaknesses of the company.

The general requirement for information is the possibility of its use for forecasting, scenario modeling that provides problem. The purpose of forecasting is to identify new problem situations that may arise during the crisis of the company and establishing their impact on the financial position of the company.

The principles ahead of anti-crisis management process involving the use of methods and tools of early fixation imbalance looming in the company on the basis of so-called "weak signals" and use it preventing preventive measures.

Technology use these methods and means known works of I. Ansoff, R. Hammer [1, 3]. However, the recommendations of these and other authors who have developed their own approaches to the early detection of imbalances tend to sound enterprises can take only an idea. In this period the Ukrainian economy crisis nature of the threat is still there in most cases beyond classical models of farming in developed countries. After all, the economic conditions prevailing in our country, it is difficult to predict developments that affect the viability of the company (frequent changes and adjustments of legislation, the uncertainty of positions of legislative and executive bodies and, ultimately, no model of

economic development). Thus, the structure of possible threats of a different nature than in developed market economies (markets, products, niche marketing).

– In our opinion, to crisis-depth research processes in the enterprise should be considered simultaneously causes an imbalance in three areas: the phases of market development; the stages of the life cycle of the company; by functional areas of activity. The idea is to be able to investigate not only the market aspect of this phase and its attendant destabilizing processes. Investigated this approach bailout process can be represented by three-level structure, in which each phase of the company (pioneer, market entry, expansion of clientele, diversification, cooperation, restruktivna) analyzed the position of state economic enterprise system (growth, maturation, stabilization, decline, liquidation) taking into account the destabilizing factors in the context of the major functional areas (business, production, social environment). In this case, the efforts of experts should be sent to:

- determine the specific parameters viability of the company at its location in a particular area of the three-level structure,
- identify destabilizing factors that threaten the viability of the company in this area.

Fixing phases in terms of market development and functional areas of crisis symptoms and causes to approach enables the identification and systematization problems of enterprise survival and stabilization of the entity for which requires appropriate strategic crisis management innovation. This task is particularly important because the problems threatening the continuity of appearance leads to the need of their multi-level coordination and systematization.

It should be noted that some considered anti-crisis innovation, primarily as a process of creative solutions to problems arising from the management, so the focus here should be creative activities by implementing innovation. It uses a variety of methods, such as brainstorming, morphological analysis synthesizing method, etc.

Availability of full information on crisis issues approach allows the formation mechanism of crisis response facility.

Under the above scenario the organizational basis for problem-oriented anti-crisis management process in the company as a single system are:

- creating Bank of target of anti-crisis programs;
- rapid implementation of control programs.

In a market economy the company, in our view, it is advisable not to oppose, but to some extent separate question the viability of the global processes of its strategic development. Given that beyond these relatively autonomous actions rather conventional, economic entities that have serious problems with their sustenance, necessary organizational effort to address the priority anti-crisis solving problems. For this and put in place the bank targeted anti-crisis

programs, each of which should contribute to solving the problem of "pulling up the rear" in a given functional area activities, including supplying-sale, production, innovation, human resources management, management.

It should be noted that the formation of the bank's programs will be established on this basis coherent system that ensured the transition from the development of individual, usually organizationally and technologically isolated programs to create a unified system of programs used as a tactical instrument in the implementation of strategic innovation. A separate application in this case acts as an autonomous means of achieving strategic objectives, resulting from a single issue, and as part of an integrated system delivers its innovative contribution to the overall anti-crisis potential of the company. It is this type of program and form the basis for the formation of the bank's programs, which is necessary regulatory basis for the strategic management of anti-crisis process in the enterprise. They act as a kind of semi-current or future decisions crisis plan harvested "in reserve" in case the need to withdraw the company from the predicament.

Forming of targeted anti-crisis program includes the following phases:

- complex analysis problems for software development;
- forming system program objectives;
- development activities programs;
- planning program performance and resource allocation;
- determination of program management;

Anti-crisis program, within the range of programs contain required details that show the location of the program, the role and how they interact with the front of anti-crisis strategic policy of the company as a whole. This allows you to put on the basic levels of the hierarchy and providing targeted programs, plan, organize and regulate obtain the effect of the interaction between the programs, to strategic monitoring and controlling, replicate programs of innovative content for their possible reuse in many enterprises.

The study of economic subjects has shown that businesses that are included in the process of recovery based on specially designed programs, can more quickly to stabilize their economic situation than those which deal with these issues in the current activity.

Targeted anti-crisis program implemented in a particular functional area should include the following activities:

- reduce the cost of products and services;
- ensure effective reproduction of fixed assets;
- ensuring verification of solvency;
- active policy to attract foreign investment;
- improve the competitiveness of products and services;
- support the efficient use of production resources;
- selection of optimal variant reorganization procedures.

In our view, the development of anti-crisis program authors must comply with the following requirements:

- availability options programs that include different approaches to achieving the goal (alternative program prices, product distribution, implementation of technical ideas, etc.);
- program should not be too complex, overloaded should consist of a series of simple tasks that together articulate way to achieve these goals;
- programs must be carefully written and their individual elements - contain detailed undertaken steps leading to achieving the strategic goal.

It should be noted that any successful program will be recognized only if obtained in the process of implementing the results are as close as possible to the target. Because life support script should contain as a mandatory component of the operational phase of the task, providing practical integrity and completeness of the strategic plan.

Given the above it can be argued that the use of various types of crisis scenario proposed process will allow them to not only maintain an appropriate level of sustainability, but also provide high competitiveness in the future.

### **Conclusions.**

Based on the study of trends and operation of engineering innovation active enterprises identified factors influence the deployment of crises that manifest at the level of the enterprise, industry and national and international economy. Proved that the domestic machine building are not using effective anti-crisis measures and will not carry out crisis management system in accordance with the deployment of the crisis, leading to a further deepening of the negative trends (decline in the share of sales to 7.9%, the decline in profitability to 0.2% and increasing the number of loss-making enterprises to 36% in 2014.

Innovative activities should be considered as a leading tool of socio-economic development and protracted exit from the current economic crisis. However, to enhance innovation engineering enterprises must carry out a wide range of measures to improve the basis of where the dynamics of innovation should be the identification and use of internal resources and mechanisms of state regulation based on the strategy of innovative development.

Requirements for sustainable enterprise development crisis necessitated multiple ground of administrative action. Method of constructing scenarios most closely reflects the current environment where decision making is carried out in constant change, and thus a high level of uncertainty.

The use of scenario analysis as a method of forecasting will, on the one hand, to identify, assess and reduce the level of uncertainty of key factors influencing both the current activities and the development of the company. On



the other hand, using scenario analysis can generate and evaluate company strategy, which is especially valuable in an uncertain economic environment.

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### **Abstract**

*The article analyzes the appropriateness of crisis management in engineering innovation active enterprises. Proved that the negative trend of engineering is the low innovation activity of its businesses, which ultimately leads to reduced production of innovative products. Most of the engineering enterprises from the high cost of credit and low investment climate has to abandon the innovative development model, actually choosing the path loss of productive capacity and competitive position in the global market.*

*Proved that in order to drive engineering enterprises of the crisis is necessary to conduct a systematic analysis of the company as a whole and determine at which stage of the crisis it is. Based on the data in the enterprise management system must change from traditionally anti-crisis to help companies put in place following organizational and economic mechanisms that would get out of the situation with minimal losses.*

*The findings identified that enhance innovation engineering enterprises must carry out a wide range of measures to improve the basis of where the dynamics of innovation should be the identification and use of internal resources and mechanisms of state regulation based on the strategy of innovative development. Requirements for sustainable enterprise development crisis necessitated multiple ground of administrative action. Method of constructing scenarios most closely reflects the current environment where decision making is carried out in constant change, and thus a high level of uncertainty.*

**Keywords:** crisis management, crisis management, bankruptcy, engineering enterprises, innovation active enterprises, innovations