FORECASTING AND ANALYSIS OF CRISIS SITUATIONS AT THE ENTERPRISE

Abstract. Enterprises, like individuals, and the state as a whole form monetary funds. Business cash is the part of your cash that is earmarked for a specific purpose. Monetary funds include the statutory fund, employee compensation fund, reserve fund, depreciation fund, etc. Enterprises form cash funds for financial support of operational, financial and investment activities, fulfillment of obligations to the state and contractors, etc. The correct organization of the process of formation of cash funds makes it possible to effectively manage the cash flows of enterprises, make optimal financial decisions, and increase the profitability of economic activity.

A necessary condition for this is the analysis of financial information contained in accounting and statistical reporting in business contracts, settlement, payment and other documents. For the most part, one of the leading subsystems of the financial system of the state, the finances of business structures have their own specifics of organization and performance of their inherent functions. A mandatory element of Ukraine's transition to market relations is the formation of new business structures and the privatization of enterprises.

The history of crises in general shows us that the study of crisis management cannot be tied to a specific civilization or era, especially when humanity has witnessed numerous and complex environmental, political, economic and military crises. In addition, some problems and complex questions of our time have their roots in history. Thus, many geopolitical crises today are the result of old causes.

The article examines both the definition of the essential and substantive characteristics of the concept of crisis management, as well as the model of crisis management at the enterprise and the diagnosis of the probability of bankruptcy, solving the problems of the enterprise's development in the conditions of the transition to the market.

Keywords: crisis, management, indicators, situation, anti-crisis management.

JEL Classification: M 21, M 29, M 41, M 49

Formulas: 2, fig.: 1, tabl.: 5, bibl.: 20.
Introduction. In the conditions of the global financial crisis and the systemic crisis of the national economy, enterprises are characterized by a further fall in the main indicators of the enterprise at the macro and micro level. The activity of any enterprise is influenced by a large number of factors that can potentially cause a crisis that can worsen work. Therefore, the high likelihood of crisis in the enterprise requires the introduction of specialized anti-crisis management. Effective anti-crisis management in practice uses the following methods: observation method, factor analysis, financial control, comparative analysis.

Analysis and statement of the research problem. The main studies and publications on this issue belong to such foreign and domestic scientists and practices as: O. G. Golovko, A. V. Zaivoronok, I. I. Kalichak, L. O. Ligonenko, L. H. Melnyk.

Ukrainian enterprises were in a difficult financial situation due to the general economic crisis, insufficient financial resources, low purchasing power of economic entities and other factors. An important reservation towards improving the activities of companies is to increase the efficiency of using their own financial resources, which occupy a significant share in the structure of companies. Economic analysis plays an important role in the implementation of the tasks as one of many management functions.

Entrepreneurship in Ukraine requires modern theoretical, methodological and methodological management support of the process of formation of own financial resources, scientific recommendations for the use of current assets of enterprises.

The aim of the article is to identify problems and substantiate the conditions of entrepreneurial activity in modern conditions of market relations.

Results of a research study. As a result of the analysis of the processed literary sources, we can say that domestic and foreign scientists do not have the unity of thoughts in the formulation of the term “crisis management”. It is advisable to give approaches to various researchers on its interpretation in Table 1.

Therefore, in view of the above, you can offer the following definition of the term. Anti-crisis management is a system of measures aimed at preventing crisis phenomena that can be caused by internal and external factors, attracting all the necessary resources of the enterprise to ensure effective activity and strengthen its level of competitiveness.

Table 1

<table>
<thead>
<tr>
<th>Foreign Scientist</th>
<th>Definition</th>
<th>Ukrainian Scientist</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. H. Pearson</td>
<td>A system of measures that helps prevent crises that occur at or more effectively manage them</td>
<td>L. O. Ligonenko</td>
<td>Special, constantly organized management aimed at promptly identifying signs of crisis and creating appropriate preconditions for timely overcoming them</td>
</tr>
<tr>
<td>K. L. Luecke, I. K. Barton</td>
<td>Part of organizational risk management whose ideal use is considered in the actual occurrence of a crisis</td>
<td>N. P. Prykhodko</td>
<td>Forms and methods of implementation of anti-crisis procedures in the context of a particular enterprise and in specific conditions of the environment</td>
</tr>
<tr>
<td>S. K. Fink</td>
<td>Involves recognizing a prodromal event and the most important symptoms of a future crisis</td>
<td>O. M. Skibitsky</td>
<td>Management, which is aimed at preventing possible serious complications in the market activity of the enterprise, ensure its stability and successful management</td>
</tr>
<tr>
<td>I. P. Mitroff</td>
<td>Measures on reactive management of an enterprise that are being developed only after the crisis has come</td>
<td>N.V. Sapa</td>
<td>External management, which is carried out by specially trained specialists and which is advisable to use only in those enterprises whose bankruptcy has negative social consequences</td>
</tr>
</tbody>
</table>

Source: Authors based on sources [8, 14, 15, 16, 17, 18, 19, 20]
Since the enterprise is a complex organized system consisting of many subsystems, the system of indicators of activity of the enterprise should provide a comprehensive approach. Since the economic situation is unstable (changes in legislation, tax regime; irresponsibility of executives, suppliers, consumers), so there are also a significant number of methods of diagnosing the probability of bankruptcy using models [6]:

The E. Altman model reflects different aspects of the economic activity of the enterprise. This allows you to dynamically predict changes in financial stability and interpret the integral indicator [5].

The interpretation of the value of the calculation indicator according to the model E. Altman is given in Table 2.

Table 2

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z &lt; 1,8</td>
<td>Bankruptcy probability is very high (over 80%)</td>
</tr>
<tr>
<td>1,81 &lt; Z &lt; 2,7</td>
<td>High (40% to 50%)</td>
</tr>
<tr>
<td>2,71 &lt; Z &lt; 2,99</td>
<td>Possible (from 15% to 20%)</td>
</tr>
<tr>
<td>Z &gt; 3</td>
<td>Very low</td>
</tr>
</tbody>
</table>

Source: Authors based on sources [6]

The interpretation of the value of the calculation indicator according to the model R. Lisa is given in Table 3.

Table 3

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z &lt; 0,037</td>
<td>Bankruptcy probability is very high</td>
</tr>
<tr>
<td>Z = 0,037</td>
<td>The limit value</td>
</tr>
<tr>
<td>Z &gt; 0,037</td>
<td>Bankruptcy probability is possible</td>
</tr>
</tbody>
</table>

Source: Authors based on sources [6]

Bankruptcy means the inability of the enterprise to fulfill its financial obligations. Qualitative assessment of the likelihood of these phenomena for forecasting and preventing the potential threat of bankruptcy at the business level is the only possible and effective way to prevent socio-economic crises [9].

The calculation of the coefficients and integral indicator of the probability of bankruptcy of the enterprise by model E. Altman for 2019-2021 is presented in Table 4.

Table 4

| Calculation of coefficients and integrated bankruptcy probability by E. Altman model |
|---------------------------------|-----------------|-----------------|-----------------|
| x                              | 2019            | 2020            | 2021            |
| x1                             | -4,7            | -5              | -5,04           |
| x2                             | 0,18            | 0,08            | 0,33            |
| x3                             | 4,13            | 3,34            | 4,64            |
| x4                             | 0               | 0               | 0               |
| x5                             | 4,04            | 3,28            | 4,53            |

Source: Authors based on sources [12]

According to Altman’s research, the 1968 model is focused on enterprises whose shares are estimated on the exchange. In 1983, E. Altman expanded his attention to those companies whose
stocks are not traded on the exchange. This model looks like formula 1:

\[ Z = 1.2x_1 + 1.4x_2 + 3.3x_3 + 0.6x_4 + 0.999x_5, \]

where \( x_1, x_2, x_3, x_5; \)
\( x_4 \) – equity/borrowed capital.

If \( Z < 1.23 \), then the enterprise is determined by bankrupt; at the value of \( Z \) within 1.23-2.89 the situation is uncertain; \( Z > 2.9 \) – the enterprise is determined financially stable [10].

\[ Z_{2019} = 1.2(-4.7) + 1.4*0.18 + 3.3*4.13 + 0.6*0 + 0.999*4.04 = 12.27. \]
\[ Z_{2020} = 1.2(-5) + 1.4*0.08 + 3.3*3.34 + 0.6*0 + 0.999*3.28 = 8.41. \]
\[ Z_{2021} = 1.2(-5.04) + 1.4*0.33 + 3.3*4.64 + 0.6*0 + 0.999*4.53 = 14.25. \]

The calculations of the E. Altman model do not give reason to conclude that the enterprise is not in the bankruptcy risk zone and even several times higher than the limit values of bankruptcy. Due to the fact that at \( Z > 2.99 \) the probability of bankruptcy is very low, it would be advisable to claim that there is no likelihood of bankruptcy for this enterprise.

Tereshchenko's model is presented in this form by formula 2:

\[ Z = 1.5x_1 + 0.08x_2 + 10x_3 + 5x_4 + 0.3x_5 + 0.1x_6, \]

where \( x_1 \) – the ratio of monetary revenues to liabilities;
\( x_2 \) – balance of balance sheet to liabilities;
\( x_3 \) – the ratio of net profit to the average annual amount of assets;
\( x_4 \) – ratio of profit to revenue;
\( x_5 \) – ratio of production inventories to revenue;
\( x_6 \) – ratio of revenue to fixed capital.

In Table 5 Here are the formulas for calculating the above factors.

<table>
<thead>
<tr>
<th>Calculation of the indicator</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1 – Cashflow/Obligation</td>
<td>0,81</td>
<td>0,63</td>
<td>0,84</td>
</tr>
<tr>
<td>x2 – balance currency/liability</td>
<td>1,23</td>
<td>1,19</td>
<td>1,22</td>
</tr>
<tr>
<td>x3 – net profit/balance</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>x4 – net profit/revenue</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>x5 – inventories/revenue</td>
<td>0,06</td>
<td>0,2</td>
<td>0,06</td>
</tr>
<tr>
<td>x6 – Revenue/Circulation</td>
<td>0,67</td>
<td>0,54</td>
<td>0,69</td>
</tr>
</tbody>
</table>

Source: Authors based on sources [12]

O. Tereshchenko's model is determined by the formula:

\[ Z = 1.5*0.81+0.08*1.23+10*0+5*0+0.3*0.06+0.1*0.67 = 1.39. \]
\[ Z = 1.5*0.63+0.08*1.19+10*0+5*0+0.3*0.2+0.1*0.54 = 1.15. \]
\[ Z = 1.5*0.84+0.08*1.22+10*0+5*0+0.3*0.06+0.1*0.69 = 1.44. \]

The scale of determining the state of the enterprise by O. Tereshchenko model:

During the analyzed period, the enterprise did not reach the safe value of the integral indicator. Accordingly, if \( 1 < Z < 2 \), the activity of the enterprise is profitable, but financial stability depends strongly on changes in the internal and external environment. The level of financial potential is the average and characteristic of this condition from 2019-2021. In 2020, \( Z = 1.15 \), which, according to the model, means a violation of financial equilibrium, in the transition to anti-
crisis management there is no risk of bankruptcy. A significant disadvantage of this model is that it does not take into account the sectoral features of business development. It is a purely theoretical nature of approaches to bankruptcy forecasting. Thus, the more versatile the model, the lower the level of its accuracy. Practice requires the introduction of not so much universal and simple, but effective methodological approaches. Therefore, financial potential is an important element of influence on production and economic activity and economic development of the enterprise. It can be argued that the financial potential determines the success of the enterprise, since the level of financial potential depends on the competitiveness and investment the attractiveness of the enterprise.

Given the results of the study, the Dnieper railway has not unstable financial condition. Analysis of liquidity and solvency does not give reason to say that the enterprise violates the rules of financing, credit and attractive as a business partner. In order to improve the efficiency of activity and financial condition as a whole, the management of the Dnieper Railway is advisable to use quality and efficient cash flow planning [10].

The network of railways of Ukraine has an orthogonal configuration. It has more or less parallel roads, latitudinal and southern [14].

Depending on the level of development of rail transport in the country, there are two regions: Donbas and Western Ukraine, where the density of transportation of roads is historically determined and is determined by the action of factors of different nature. In the Donbas and the Dnieper, because of the need for transportation of production, which here, in the West, reached a high development, mainly due to the border position [14,7].

Therefore, the main problems that need to be addressed in Fig. 1.

![Diagram of financial problems](image)

**Fig. 1. Dynamics of bankruptcy cases of business entities**

*Source: Authors based on sources [7]*

In order to solve the tasks of the national level, Ukrzaliznytsia has developed a program of development of railway transport in Ukraine, which provides for the improvement and further development of railway transport for the coming years and for the future [5].

According to this program, it is planned to determine clear interactions between the department and the state. Without public investment, the railway will not be able to solve all the problems. In all countries with developed market relations, railways are maintained by state subsidies.

The plans of Prydniprovska Ukrzaliznytsia – the construction of new railway telecommunications networks, unloading of overloaded, series of bridges, tunnels, replenishment of
the wagon park with heavy cargo wagons [15].

Due to the nature of the impact of rail transport on the environment, this problem has two aspects [7]:

- use of transport of natural resources;
- transport pollution of the environment.

Rail transport influences the environment as a large consumer of fuel, forest and land resources, minerals and building materials. Although, compared to other modes of transport (especially cars), it is the environment [10,15].

Conclusions. Ukraine is characterized by unstable development conditions, where business management issues from the standpoint of economic security are too relevant.

Consideration and analysis of the above issues led to the need to find ways to improve the process under study. As determined earlier, anti-crisis management is a system of measures aimed at preventing crisis phenomena, which can be caused by internal and external factors, attracting all the necessary resources of the enterprise to ensure efficient work and improve its level of competitiveness.

The most important management function at the stage of direct implementation of planned measures is to organize the control over timely modernization or correction of previously developed anti-crisis policy through unpredictable perturbation of internal and external factors and behaviour of individual counterparties.

The unprecedented level of uncertainty and the global economic crisis require the management of the relevant organizational transformation, the correction of the experience of anti-crisis management systems of business processes. The need for measures to improve the technology of management of the Dnieper railway in problematic situations is that the consequences of its general approaches are specific actions that would ensure the quality use of the labour potential of staff, the maximum benefit for the enterprise with minimal losses. All this forces the enterprise to take initiative and ingenuity, to carry out full liability.

This is due to the necessity and importance of systematic analysis of sources of formation of the enterprise's own financial value, which play an important role in ensuring its stable financial state and stability.
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ПРОГНОЗУВАННЯ ТА АНАЛІЗ КРИЗОВИХ СИТУАЦІЙ НА ПІДПРИЄМСТВІ

Анотація. Підприємства, як і фізичні особи, і держава в цілому утворюють грошові фонди. Грошові кошти підприємства – це частина готівки, яка призначена для певної мети. До грошових фондів відносяться: статутний капітал, фонд оплати праці працівників, резервний фонд, амортизаційний фонд. Підприємства формують грошові фонди задля фінансового забезпечення операційної, фінансової та інвестиційної діяльності, виконання зобов’язань перед державою та підрядниками тощо. Правильна організація процесу утворення грошових фондів дає можливість результативного управління грошовими потоками підприємств, прийняття оптимальних фінансових рішень, підвищення прибутковості господарської діяльності.

Необхідною умовою для цього є аналіз фінансової інформації, що міститься в бухгалтерській і статистичній звітності в господарських договорах, розрахункових, платіжних та інших документах. Здебільшого одна з провідних підсистем фінансової системи держави, фінанси підприємницьких структур мають свою специфіку організації та виконання притаманних їм функцій. Обов’язковим елементом переходу України до умов Європейського Союзу є утворення нових бізнес-структур і приватизація підприємств.

Історія криз загалом показує, що вивчення кризового менеджменту не може бути прив’язане до конкретної цивілізації чи епохи, особливо коли людство було свідком численних і складних екологічних, політичних, економічних та військових криз. Крім того, деякі проблеми та складні питання сучасності сягають корінням в історію. Таким чином, багато геополітичних криз сьогодні є результатом старих причин.

У статті досліджено визначення сутнісно-змістову характеристику поняття кризового управління, досліджено модель кризового менеджменту на підприємстві та виконано діагностику ймовірності банкрутства, вирішено проблеми розвитку підприємства у сучасних умовах ринкових відносин.

Ключові слова: криза, управління, показники, ситуація, антикризове управління.

Формули: 2, рис.: 1, табл.: 5, бібл.: 20.