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ANALYTICAL SUPPORT OF CREDIT CAPACITY ASSESSMENT OF BUSINESS ENTITIES AND ITS IMPROVEMENT

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ABSTRACT

The article examines the components of information support for assessing the credit capacity of the borrower. External sources of information for analytical support of the borrower's credit capacity assessment are identified and characterized. The algorithm for assessing the financial condition of the debtor – legal entity by the stages is clarified. Financial ratios are analyzed and the class of the debtor – legal entity PJSC “Dashkivtsi” is examined. Methodological bases of analytical support of credit capacity assessment of business entities taking into account off-balance sheet risks through coefficient analysis are offered, which has provided an opportunity to identify their impact on the liquidity and financial stability and increase the accuracy of determining the borrower class.

Keywords: analysis, credit capacity, information support, integrated indicator, borrower class, rating, methodological principles.

Raising of problem. In today's crisis, commercial banks are characterized by low lending activity, which is associated with a reduction in the capital as a result of increased costs for the formation of reserves and the need for additional recapitalization, increasing regulatory requirements for credit risk assessment, deteriorating payment discipline of borrowers. The growth of crisis phenomena in the banking system is partly due to the influence of macroeconomic factors and the deterioration of the economic and political situation in the country. This has led to a decrease in the quality of the loan portfolio of banking institutions and an increase in the level of problem loans, which requires the transformation of existing approaches to the formation of credit relations with borrowers and assessment of creditworthiness in the direction of reducing possible banking

risks. In modern conditions, the assessment of the borrower's creditworthiness is an important tool for the identification, analysis, and management of credit risks, which puts forward new requirements for the analytical mechanism of bank management.

Analysis of researches and publications. Problematic issues of the borrower were studied by leading foreign and domestic scientists: Y. Aleskerova, E. Altman, A. Beatty, V. Vitlinsky, L. Vdovenko, V. Gordopolov, D. Geley, A. Epifanov, I. Zamula, F. Sacher, T. Karlin, M. Krouhi, A. Krutova, O. Lavrushin, O. Oliynyk, O. Petruk, L. Primostka, M. Robert, P.S. Rose, M. Savluk, J. Sinki, O. Tereshchenko, O. Tomchuk, and others. However, despite the significant scientific achievements of scientists, the issues of assessing the borrower's creditworthiness remain unresolved, taking into account the off-balance-sheet risks that accompany

credit operations. There is an objective need for the formation and development of an analytical mechanism for assessing the creditworthiness of the borrower, improving its methodological support in the direction of taking into account domestic banking practices and progressive foreign methods.

Formulation of aims of the article. The purpose of the article is to study the methodological and organizational provisions of the analytical support for assessing the creditworthiness of economic entities and the development of practical recommendations aimed at improving it.

Exposition of basic material of research. The depth and reliability of the borrower's creditworthiness assessment and the objectivity of the analytical conclusions obtained as a result of the financial analysis conducted by the employees of the credit departments are ensured by attracting and processing various sources of information support.

The assessment of the borrower's creditworthiness is always carried out on the basis of appropriate information support, which contains the generated internal and external information. The use of a quality information base to assess the borrower's creditworthiness will facilitate effective management decisions by both the lender and the borrower.

It should be noted that the process of assessing the creditworthiness of a potential borrower includes a number of mandatory stages, at each of which an important role is played by information support.

In general, information support is classified according to the following substantive features [1]: 1) statistical information; 2) administrative information; 3)

mass information; 4) information on the activities of state authorities and local and regional self-government bodies; 5) regulatory information; 6) personal information; 7) information of reference and encyclopedic nature; 8) sociological information; 9) accounting information.

We agree with the position of A. Epifanov [2], who argues that the borrower's information support should be understood as the process of purposeful selection of relevant indicators needed for qualitative analysis and evaluation of all areas of economic activity in making decisions about the possibility of providing credit.

The composition of information support for credit assessment is different depending on the characteristics of the classification. According to the sources of formation of information support for assessing the creditworthiness of the borrower is divided into external and internal (Fig. 1).

The question of the formation of the corresponding requirements to information support of an estimation of creditworthiness of the borrower is important.

In some sources, the requirements of information support assessment of the borrower's creditworthiness add comparability, which allows you to compare the financial condition of enterprises among themselves; the forecast value of information, which consists in determining the promising areas of development of the business entity; information feedback, which allows you to monitor the implementation of management decisions and adjust them depending on the situation.

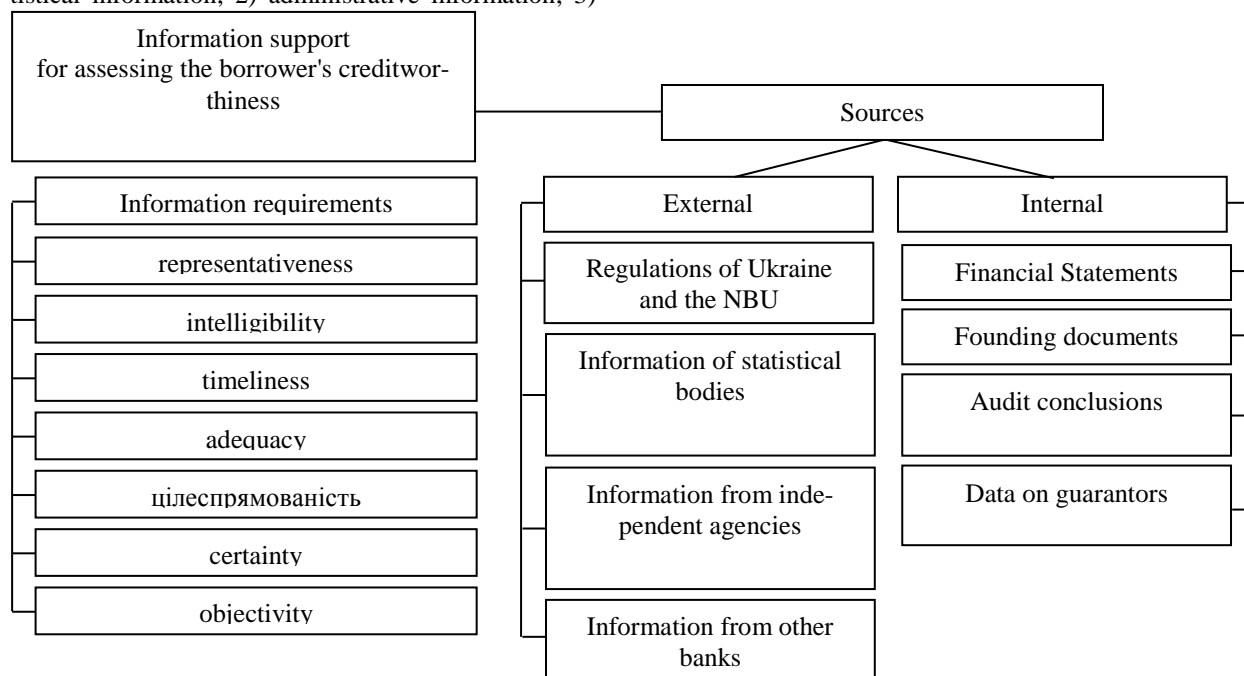


Fig. 1. Components of information support for assessing the creditworthiness of the borrower

* Source: [1]

Information support for assessing the creditworthiness of the borrower should provide the following information for analysis: 1) the procedure and features of the financial and economic activities of the borrower; 2) business owners and their share in the business; 3) financial results of the borrower; 4) list of related parties; 5) property status of the enterprise; 6) availability of loan collateral; 7) prospects for further development of the enterprise; 8) possible risks [3].

The most important source of information for high-quality analytical support of the borrower's creditworthiness is the accounting information provided by financial statements, tax reporting, operational accounting, and reporting data, primary documents on individual business transactions, sample accounting data, etc [4].

Financial reporting needs a particularly detailed study. The Law of Ukraine " On Accounting and Financial Reporting in Ukraine " presents the interpretation of financial statements as follows: these are financial statements that contain information about the financial condition, results of operations, and cash flows of the enterprise for the reporting period [5]. For the purposes of the analysis, it is important to use all formed accounting systems of the enterprise.

The most informative form is the balance sheet (statement of financial position) (f. 1), which allows you to assess the management of the borrower's property, its financial results, cash flows, the efficiency of capital allocation, its adequacy for current and future activities, the efficiency of borrowing and more. Based on the balance sheet information, the bank forms a decision about possible risks when granting a loan [6].

Statement of financial performance (Statement of comprehensive income) (f. 2) is one of the important sources of information for assessing the profitability of the enterprise, which allows you to assess the dynamics of profit indicators and justify the formation and distribution of their actual value, assess possible reserves for further profit growth and determine the impact various factors on its size.

The statement of cash flows (f. 3) is an important source of information for assessing cash flows, which allows you to determine the solvency and liquidity of the borrower. It provides an opportunity to analyze the amount and sources of cash flow, the adequacy of own funds for investment and financial activities, the ability of a potential borrower to pay current liabilities, identify causes of mismatch between cash and income.

The statement of equity (f. 4) contains information about changes in the equity of the enterprise during the reporting period. From the standpoint of analytical research f. 4 provides an opportunity to assess the structure of equity in the dynamics, to determine whether the company is growing capital, to calculate financial stability.

So, the forms of financial statements have significant analytical properties that allow the banking institution to decide on the feasibility and effectiveness of future credit relations with the borrower. However, on

the basis of only official financial statements, it is impractical to draw final conclusions about the financial condition of the borrower and assess its creditworthiness. The client-manager of the credit department must assess the impact of probable external changes in the market on the activities of the enterprise, analyze the state of the material base, customer base, and base of suppliers of factors of production, product range, and more.

Important sources of information for assessing creditworthiness are also management accounting data, which provide an opportunity to deepen the level of final conclusions on the possibility of granting credit, formulated on the basis of financial statements. In particular, for the completeness of creditworthiness assessment, it is advisable to require the following forms of internal management accounting documents:

1) payment documents for the target direction of credit funds - contracts (agreements), invoices, bills of lading;

2) business plan, feasibility study (provided by the client if a new area of activity is financed by credit funds and the projected increase in average monthly revenue (due to the development of a new line of business) exceeds 40% of average monthly revenue for the analyzed period);

3) copies of lease agreements for premises, vehicles, equipment, etc. (provided if available);

4) copies of agreements on economic activity (provided if available);

5) a report on the independent valuation of the property offered as collateral by the Bank.

For a complete analytical study of creditworthiness assessment, special attention should be paid to the feasibility study of the loan and its provision. The issues to be analyzed in the assessment of collateral are: 1) assessment of the degree of liquidity of the collateral; 2) the adequacy of collateral to cover possible losses of the credit transaction.

When assessing the borrower's creditworthiness, information about his past and present condition are also important. As domestic and foreign practice shows, for the purposes of analyzing the financial condition of the borrower, who applies to a banking institution, not for the first time, there is a credit history, which helps the lender to form a conclusion about the borrower's past creditworthiness. If the first application of the borrower to the bank, an important source of information for assessing creditworthiness is the information obtained from specialized news agencies. As domestic banking institutions quite often do not have the opportunity to use the services of such agencies, they limit themselves to information about the borrower from unofficial sources and analyze their own creditworthiness.

The generalization of the composition of the recommended external sources of information for assessing the creditworthiness of the borrower is presented in table 1.

Table 1

The composition of the recommended external sources of information for analytical support of the borrower's creditworthiness and their characteristics

Sources	Characteristics of information sources
1	2
EXTERNAL SOURCES OF INFORMATION	
Borrower's credit history; information of financial and analytical mass media; information from other banking institutions; statistical information; information received from the business partners of the borrower's enterprise; information generated on the basis of the conclusions of the bank's security services; information obtained from independent analytical agencies	Provide information about the rating of the enterprise among similar enterprises, determine its competitive place in the market, allows you to assess its competitive advantages
Legislative and regulatory acts of Ukraine and the National Bank of Ukraine	Law of Ukraine "On Banks and Banking" Instruction on the procedure for regulating the activities of banks in Ukraine (NBU Resolution № 368 of August 28, 2001, as amended on November 12, 19) Resolution of the Board of the NBU On approval of the Regulation on determining the amount of credit risk by banks of Ukraine for active banking operations (Resolution of 30.06.2016 № 351) Methods of calculating economic standards for regulating the activities of banks in Ukraine (NBU Resolution № 315 of 02.06.2009) and others

* Source: [7, 8, 9, 10]

In the literature, in addition to the division of information sources into external and internal, there are other features of the classification of information support assessment of the borrower's creditworthiness [11], in particular: 1) the information obtained personally from the client. For example, information about the financial condition of the borrower, business activities, the objectives of the loan project, etc.; 2) the information obtained in the bank's archives. In terms of content, such information can be external or internal. Its feature is that the materials are formed, processed, controlled, and stored directly by banking institutions.

In some sources, the authors use such a feature of classification as official (or formal) and informal information. The official information can also be both external and internal. In the context of sources of information support for the work of credit operations analyst, scientist Tchaikovsky also proposes to apply the classification of sources into external and internal [12]. But there is a difference in the composition of the proposed sources. In addition to regulations of the NBU and documents of business entities, the author includes international financial reporting standards (IFRS) and Accounting Regulations (standards). The author defines internal sources as the internal methodological base of the bank, commercial documents of the bank, and acts of audits (inspections). Despite the rather detailed list of sources of information, we consider the proposed classification too cumbersome.

It should be noted that in order to make the right management decision about the possibility of credit relations between the borrower and the bank, the latter must analyze the negative information about the company if any. Such information includes cases of loan refusals; violation by the borrower of the terms of the agreement; cases of debt write-off and others.

In the context of the formation of information support for assessing the creditworthiness of the borrower, there are a significant number of unresolved issues. For example, as practice shows, often none of the sources contains complete information. Most management decisions related to the granting of credit are made on the basis of official financial statements, which do not reflect the current financial condition and current business processes.

Also, one of the significant problems of information support can be determined by the inaccuracy of information, due to a number of reasons of objective and subjective nature. Among the objective reasons that caused the deviation of information from reality are inaccuracies in identifying the degree of physical and moral depreciation of non-current assets of the enterprise, increase or decrease in the degree of risk due to changes in the value of securities portfolio, depreciation of property due to inflation and others. Subjective reasons for obtaining inaccurate information are a deliberate distortion of internal and external information support of the system assessment by its compilers in order to mislead users with the results of the analysis of the financial condition of the borrower.

According to the recommendations of Basel II in banking practice, it is important to use rating models of analysis in assessing credit risk. At the same time, an important problem in the development of such models is the accumulation of primary data for the implementation of analytical functions. Most banks do not have such an information database, which complicates the full application of rating models. The way out of this situation is the formation of a single database of borrowers (in particular, at the level of the NBU).

Creditworthiness assessment is one of the factors that reduce credit risk for a banking institution. At the same time, commercial banks in Ukraine do not have a

perfect methodological tool for assessing the creditworthiness of the borrower.

The procedure for assessing the borrower's creditworthiness in the analysis process involves its division into two stages. The first establishes a list of indicators used to analyze the financial condition of the entity (financial ratios). The second stage is used for the needs of evaluation and generalization of indicators and determination of the borrower's reliability class.

Let us briefly dwell on the characteristics of each of the methods of assessing creditworthiness.

The analysis of the creditworthiness of a domestic borrower should in some way take into account the world experience of organizing credit relations between the bank and the borrower. When deciding on a loan in world practice, the bank analyzes the client's activities

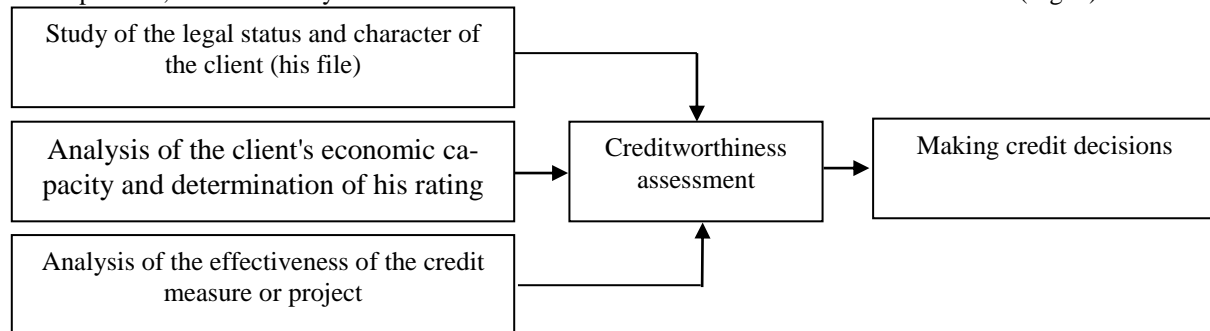


Fig. 2. Elements of the methodology for assessing the creditworthiness of the client

* Source: [13]

In accordance with the "Regulations on the formation and use by banks of Ukraine of reserves for possible losses on active banking operations" [14] the bank assesses the financial condition of the legal entity (except the bank), which is granted a loan by calculating the integrated financial condition of the debtor - legal entity.

The Bank calculates the integrated indicator using a multifactor discriminant model according to the following formula:

$$Z = a_1 \times C_1 + a_2 \times C_2 + a_3 \times C_3 + a_4 \times C_4 + a_5 \times C_5 + \dots + a_n \times C_n - a_0, \quad (1)$$

where Z – is the integral index;

C1, C2, ..., Cn – financial ratios, which are determined on the basis of financial statements of the debtor - a legal entity for a large or medium-sized enterprise;

in the following areas, the first letters of which are the abbreviation CAMPARI:

C - character - characteristics of the client, personal qualities;

A - ability - the ability to repay the loan;

M - margin - yield;

P - purpose - the purpose for which the money will be spent;

A - amount - the size of the loan;

R - return - loan repayment terms;

I - insurance - insurance of risk of non-repayment of the loan [13].

This methodological approach allows, taking into account the peculiarities of the conditions of borrowers in Ukraine, to propose such a scheme for assessing the creditworthiness of the bank's client (Fig. 2).

a1, a2, ..., an – parameters that are determined taking into account the weight and bit size of financial ratios and are updated annually by the National Bank of Ukraine on the basis of financial statements of debtors - legal entities. To update the parameters of the discriminant model, the Bank shall submit to the National Bank of Ukraine relevant information on the data of financial statements of debtors - legal entities in the form and within the time limits set by the National Bank of Ukraine.

The Bank calculates the integrated indicator taking into account the explanations for determining the model for calculating the integrated indicator of the financial condition of the debtor - legal entity, given in Annex 3 to the Regulation [14], based on the company's ownership in accordance with Ukrainian legislation to large, medium or small and its economic activity. Table 2).

Table 2

Models for calculating the integrated indicator of the financial condition of the debtor - a legal entity

№ p/p	Groups of economic activities	For large or medium enterprises
1	Agriculture, forestry, and fisheries: section A (sections 01-03)	$Z = 1,3 \times C_3 + 0,03 \times C_4 + 0,001 \times C_5 + 0,61 \times C_6 + 0,75 \times C_7 + 2,5 \times C_8 + 0,04 \times C_9 - 0,2$

* Source: [14]

The Bank determines the type of economic activity of the enterprise in accordance with the Classification of Economic Activities DK 009: 2010 on the basis of its interpretation of form № 2 "Statement of financial performance (Statement of comprehensive income)" (line 2000) annual financial statements of the debtor - legal entity for the last reporting period on income structure.

Private Joint Stock Company (PJSC) "Dashkivtsi" belongs to medium-sized enterprises.

The model for calculating the integrated indicator of the financial condition of the debtor - a legal entity is determined at least once a year, based on the maximum share of income from a particular activity in total net income from sales of products (goods, works, services).

Next, the financial ratios (Table 3) are determined on the basis of financial statements for the last reporting period and reporting data of the last reporting year on form № 1 "Balance Sheet (Statement of Financial Position)", form № 2 "Statement of Financial Performance (income)" [6].

Table 3

Financial ratios for calculating the integrated indicator of the financial condition of the debtor - a legal entity

Financial ratio	Characteristic	Calculation algorithm (lines)
1. C1 – coverage ratio (third-degree liquidity)	The ability of an enterprise to cover current liabilities with current assets	F. № 1: $\frac{1195, \text{ line } 4}{1695, \text{ line } 4}$
2. C2 – intermediate coverage ratio	The ability of an enterprise to settle its current liabilities with monetary current assets. Characterizes the expected solvency of the debtor in the short term	F. № 1: $\frac{(1120^1+1125+1160+1165), \text{ line } 4}{1695, \text{ line } 4}$
3. C3 – coefficient of financial independence	The share of equity in total funding sources. Characterizes the degree of dependence of the enterprise on loan sources of financing	F. № 1: $\frac{1495, \text{ line } 4}{1900, \text{ line } 4}$
4. C4 – the ratio of non-current assets to equity	The level of financing of non-current (long-term) assets from the company's equity	F. № 1: $\frac{1495, \text{ line } 4}{1095, \text{ line } 4}$
5. C5– return on equity	The efficiency of use of the capital of the enterprise invested by owners	F. № 2: $\frac{2350 - 2355, \text{ line } 3}{((1400+1405+1410-1425-1430), \text{ rp.3}+(1400+1405+1410-1425-1430), \text{ line } 4) \div 2}$ F. № 1:
6. C6 – profitability ratio of sales by the financial result from operating activities	Characterizes the profitability of sales by the financial result from operating activities to taxation and the implementation of costs associated with borrowing	F. № 2: $\frac{2190 - 2195, \text{ line } 3}{2000, \text{ line } 3}$ F. № 2:
7. C7 – profitability ratio of sales by financial result before tax	Characterizes the profitability of sales by financial result before tax, financial expenses, and depreciation	F. № 2: $\frac{2290 - 2295+2250+2515, \text{ line } 3}{(2000+2120), \text{ line } 3}$ F. № 2:
8. C8– return on assets for net income	Characterizes the efficiency of use (profitability) of enterprise assets	F. № 2: $\frac{2350 - 2355, \text{ line } 3}{F. \text{ № } 1: (1300, \text{ line } 3+1300, \text{ line } 4) \div 2}$
9. C9 – turnover ratio of current assets	Characterizes the efficiency of current assets of the enterprise	F. № 2: $\frac{2000, \text{ line } 3}{F. \text{ № } 1: (1195, \text{ line } 3+1195, \text{ line } 4) \div 2}$
10. C10 – turnover ratio of loan capital by financial result before tax	The company's ability to pay off debts from domestic financial sources	F. № 2: $\frac{2290 - 2295+2250+2515, \text{ line } 3}{F. \text{ № } 1: (1595+1695), \text{ line } 4}$

* Source: [6, 15]

For the purposes of calculating financial ratios, all reporting indicators are taken into account with a sign (+), as provided by the relevant provisions (standards) of accounting. The sign (-) takes into account only the indicator of equity (form № 1 "Balance Sheet (Statement of financial position)", 1,1495 if it has a negative value.

If when calculating the financial ratio the denominator of the formula is 0, then when calculating the integrated indicator is taken the value of the financial ratio equal to 1 (except for financial ratios C5, C6, C7, which is taken as a value equal to 0). If the denominator of the coefficient C5 is equal to 0 or has a negative value, then

the value of the coefficient equal to 0 is taken for calculations.

The class of the debtor - a legal entity is determined depending on the value of the integrated indicator, taking into account the size of the enterprise (large, medium) (Table 4). The highest class of the debtor - 1, the lowest - 9.

The bank determines the class of the debtor - a legal entity not higher than 8, if:

- in the agreements there is a written consent of the debtor to collect, store, use and disseminate through the credit history bureau information about

Table 4

№ p/p	Types of economic activity	Class								
		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
1	Agriculture, forestry, and fisheries: section A (section 01-03)	More than +1,25	From +1,25 before +0,81	From +0,80 before +0,60	From +0,59 before +0,35	From +0,34 before +0,05	From +0,04 before -0,25	From -0,26 before -0,70	From -0,71 before -3,20	Less than -3,20

the debtor - a legal entity;

- the bank did not provide after 01.01.2014 to the credit history bureau information about the debtor in the presence of the relevant consent in the agreement;

- no financial statements of the debtor for the last reporting period;

- bankruptcy proceedings have been instituted against the debtor.

The bank determines the class of the debtor - a legal entity not higher than 9 if the debtor is declared bankrupt in the manner prescribed by law.

From the standpoint of a commercial bank, we will assess the financial condition of PJSC "Dashkivtsi", determining its class depending on the value of the integrated indicator (Table 5). The source information is f. № 1 "Balance Sheet (Statement of Financial Position)" and f. № 2 "Income Statement (Statement of comprehensive income)" for 2017-2019 years.

The algorithm for assessing the financial condition of the debtor - a legal entity includes interrelated stages.

The first stage. Based on the company's affiliation in accordance with the legislation of Ukraine to large, medium, or small and the type of its economic activity, the model of calculating the integrated indicator of the financial condition of the debtor - a legal entity is chosen (Table 2).

PJSC "Dashkivtsi" has a type of economic activity - agriculture.

The second stage. According to the financial statements of the enterprise, the financial ratios are calculated, which are used to determine the integrated indicator of the financial condition of the debtor - a legal entity (Table 3). The values of financial ratios are shown in the table. 5.

Table 5

Financial ratios and class of the debtor - a legal entity PJSC "Dashkivtsi"

№ p/p	Indexes	2017	2018	2019	Deviation, (+,-)
1	Coverage ratio (third-degree liquidity) (C ₁)	8,129	9,706	16,168	8,039
2	Intermediate coverage ratio (C ₂)	0,427	1,328	1,046	0,619
3	Coefficient of financial independence (C ₃)	0,867	0,921	0,949	0,082
4	The ratio of non-current assets to equity (C ₄)	3,687	3,892	5,501	1,814
5	Return on equity (C ₅)	0,198	0,475	0,329	0,131
6	Profitability ratio of sales by the financial result from operating activities (C ₆)	0,252	0,323	0,316	0,064
7	Profitability ratio of sales by financial result before tax (C ₇)	0,313	0,356	0,362	0,049
8	Return on assets for net income (C ₈)	0,181	0,427	0,308	0,127
9	Turnover ratio of current assets (C ₉)	1,047	1,698	1,172	0,125
10	Turnover ratio of loan capital by financial result before tax (C ₁₀)	1,635	4,927	5,816	4,181
11	Integral indicator of financial condition	2,921	2,714	2,480	- 0,441
12	Debtor class - legal entity	1	1	1	x

* Source: formed on the basis of financial statements of PJSC "Dashkivtsi" for 2017-2019

The data in Table 5 allow us to draw a conclusion about the stable financial condition of PJSC "Dashkivtsi" (the highest creditworthiness class - 1).

In 2017, the integrated indicator of financial condition is equal to 2,921, in 2018 - 2,714, in the reporting period - 2,480. The values of financial ratios increased, in particular, the ratio of financial independence increased by 0,082 points. All profitability ratios also increased, indicating an increase in net income at the end of 2019. The turnover ratios of current assets and borrowed capital in the reporting period accelerated their turnover by 0,125 points and 4,181 points, respectively.

The third stage. Calculation of the integrated indicator of the financial condition of PJSC "Dashkivtsi" (according to the model of Table 2).

$$Z_{2017} = 1,3 \times C_3 + 0,03 \times C_4 + 0,001 \times C_5 + 0,61 \times C_6 + 0,75 \times C_7 + 2,5 \times C_8 + 0,04 \times C_9 - 0,2 = 1,3 \times 0,867 + 0,03 \times 3,687 + 0,001 \times 0,198 + 0,61 \times 0,252 + 0,75 \times 0,313 + 2,5 \times 0,181 + 0,04 \times 1,047 - 0,2 = 1,1271 + 1,11061 + 0,000198 + 0,15372 + 0,23475 + 0,4525 + 0,04188 - 0,2 = 2,921.$$

$$Z_{2018} = 1,3 \times C_3 + 0,03 \times C_4 + 0,001 \times C_5 + 0,61 \times C_6 + 0,75 \times C_7 + 2,5 \times C_8 + 0,04 \times C_9 - 0,2 = 1,3 \times 0,921 + 0,03 \times 3,892 + 0,001 \times 0,475 + 0,61 \times 0,323 + 0,75 \times 0,356 + 2,5 \times 0,427 + 0,04 \times 1,698 - 0,2 = 1,1973 + 0,11676 + 0,000475 + 0,19703 + 0,267 + 1,0675 + 0,06792 - 0,2 = 2,714.$$

$$Z_{2019} = 1,3 \times C_3 + 0,03 \times C_4 + 0,001 \times C_5 + 0,61 \times C_6 + 0,75 \times C_7 + 2,5 \times C_8 + 0,04 \times C_9 - 0,2 = 1,3 \times 0,949 + 0,03 \times 5,501 + 0,001 \times 0,329 + 0,61 \times 0,316 + 0,75 \times$$

$0,362 + 2,5 \times 0,308 + 0,04 \times 1,172 - 0,2 = 1,2337 + 0,16503 + 0,000329 + 0,19276 + 0,2715 + 0,77 + 0,04688 - 0,2 = 2,480$.

The values of the integrated indicator are entered in table 5.

The fourth stage. The class of the debtor - a legal entity is determined depending on the value of the integrated indicator, taking into account the size of the enterprise (large, medium, or small) (Table 4).

Thus, we see a decrease in the integrated indicator at the end of 2019, but still, its value is high - 2,480.

For the express - the analysis of creditworthiness of the enterprise define and analyze two indicators: the rate of profit and liquidity.

The rate of return on invested capital is determined by the ratio of the amount of profit to the total liabilities of the balance sheet and is determined by the formula [15]:

$$R = P / A (C), \quad (2)$$

where R is the rate of return,

P - the amount of profit for the reporting period,

A (C) - the total amount of capital (liabilities of the balance sheet).

To determine the liquidity of the enterprise, a liquidity balance is drawn up, which is the basis for granting loans (Table 6).

Table 6 shows that the balance of PJSC "Dashkivtsi" at the end of the reporting period is not absolutely liquid, because the condition $A_1 \geq L_1$ at the beginning and end of the reporting period is not met. The difference between the most liquid assets and term (immediate) liabilities is: at the beginning of the period the shortage was 8486 thousand UAH, at the end of the reporting period - 1138 thousand UAH. The level of coverage of liabilities was 11,7% and 86,6%,

Table 6

Balance sheet liquidity analysis, thousand UAH

Assets	At the beginning of the reporting period	At the end of the reporting period	Liabilities	At the beginning of the reporting period	At the end of the reporting period	Payment surplus or shortage	
						At the beginning of the reporting period	At the end of the reporting period
The most liquid assets (A1)	1124	7331	Immediate liabilities (L1)	9610	8469	- 8486	- 1138
Fast-moving assets (A2)	11961	44082	Short-term liabilities (L2)	-	-	11961	44082
Slow-moving assets (A3)	80189	85517	Long-term liabilities (L3)	-	-	80189	85517
Hard-to-sell assets (A4)	28972	28537	Permanent liabilities (L4)	112636	156998	-83664	- 128461
<i>Balance</i>	122246	165467	<i>Balance</i>	122246	165467	-	-

* Source: formed on the basis of financial statements of PJSC "Dashkivtsi" for 2017-2019

respectively. Condition $A_3 \geq L_3$ for the company is met, which indicates a high level of its prospective solvency, the company has a sufficient amount of stocks, goods, and other assets that are slowly sold.

Inequality $A_4 \leq L_4$ at the end of the reporting period is also fulfilled, which indicates the sufficiency of the company's equity, which is directed to the formation of current assets. At the end of 2019, there is a shortage in the amount of 128461 thousand UAH. due to the fact that the value of non-current assets decreases more slowly than the number of fixed liabilities. The amount of excess equity over non-current assets can be used to cover the growth of current assets, which is an unconditional criterion for the solvency of the enterprise.

So, the balance sheet of the enterprise is not sufficiently liquid, as only the first condition of liquidity is not met, but it indicates the creditworthiness of PJSC "Dashkivtsi".

Depending on the value of the liquidity ratio, the bank divides enterprises into three groups [13]:

- creditworthy if liquidity ratio > 1.5 ;
- limited creditworthiness, if $1 < \text{liquidity ratio} < 1.5$;
- insolvent if liquidity ratio < 1 .

Using the data in Table 5, it can be noted once again that PJSC "Dashkivtsi" is creditworthy, as the value of this indicator in 2019 was 16,168 points.

The liquidity of the enterprise is characterized by the coefficients of financial stability, which were considered above, and the coefficient of attraction of funds, which reflects the level of financial independence of the enterprise from borrowed funds. The smaller the value of this ratio, the higher the creditworthiness of the enterprise. This ratio is determined by the formula:

$$R_{AL} = A / C \quad (3)$$

where R_{AL} - loan attraction ratio;

A - arrears;

C - current assets.

Consider these indicators in table 7.

Table 7

Analysis of creditworthiness of PJSC "Dashkivtsi"

Indexes	Years			Deviation, (+, -)	
	2017	2018	2019	Absolutely	Relative %
Rate of return	0,156	0,354	0,268	0,112	71,8
Fundraising ratio	0,174	0,103	0,062	- 0,112	- 64,4

* Source: formed on the basis of financial statements of PJSC "Dashkivtsi" for 2017-2019

So, in PJSC "Dashkivtsi" there is an improvement in financial condition in 2019 on such indicators as the rate of return by 0,112 points and an improvement in the ratio of funds – 0,112 points compared to the base year. This change in indicators indicates independence from borrowed sources and the high creditworthiness of the company.

In international and national banking practice, one of the most common approaches to determining the borrower's creditworthiness is *rating systems* focused on taking into account the quantitative and qualitative characteristics of the client. Such systems make it possible to determine creditworthiness with the help of a complex indicator - rating, usually expressed in points, to set the limits of the interval of its fluctuations and depending on the number of points to justify the borrower's membership in a particular class of credit risk.

Rating systems provide primarily the choice and justification of the system of indicators and their classification by groups, ranked depending on their importance in assessing the creditworthiness of the client from the standpoint of the bank. That is, the same indicators may have different weight in assessing credit risk from the perspective of different banks, as well as depending on the type of loan. For example, in the case of short-term credit, the most important indicators of liquidity and financial stability, in long-term lending - production efficiency, and profitability.

The borrower's credit rating system should be developed by each bank individually depending on the bank's credit policy, strategic plans, marketing research, and general credit quality requirements offered by the

central bank. Thus, rating systems reflect the approach of a particular bank to assessing the quality of loans and can differ significantly in terms of banks.

So, the rating is the arrangement of indicators in a certain order depending on the amount for each indicator and their total amount for all indicators to assess the class of creditworthiness.

The sum of points for each indicator is determined by multiplying the class of this indicator by its weight, which is set depending on its importance and significance for a particular bank in assessing creditworthiness. The significance of the indicator is determined individually for each group of suppliers depending on the policy of the bank, customer characteristics, liquidity of their balance sheet, market position. For example, the high share of short-term resources, the presence of overdue debts to creditors and loans, and defaults to suppliers increase the role of liquidity ratios, which assess the ability of the company to release cash quickly. Attracting the bank's resources to lending for fixed stocks, reducing the amount of equity raises the rating of financial leverage.

The whole system of selected indicators is allocated 100 items that make up the unit, according to the relative importance of an indicator for credit decision-making.

The overall assessment of the client's creditworthiness (its rating) is defined as the sum of points for each indicator. Depending on the limits of the value calculated in this way, the borrower on the basis of the rating scale (Table 8) is assigned to a certain class (A, B, C, D, E).

Table 8

Borrower's credit rating scale

№ p/p	The value of the integrated indicator	Class
1	Over 200	A
2	160-200	B
3	135-160	C
4	110-135	D
5	Less than 110	E

* Source: [16]

Commercial banks build their credit relations with enterprises of each class in different ways. Based on the rating assigned to the borrower, the credit inspector makes a preliminary decision on the possibility of granting a loan and lending conditions.

Consider the algorithm for calculating the credit rating of this company in the following example. Using the data of Table 5, the values of evaluation coefficients in 2019 in PJSC "Dashkivtsi" are as follows: the ratios of absolute liquidity, quick liquidity, current liquidity, autonomy are 0,86, respectively; 1,05; 16,17; 0,95, and

asset turnover – 0,938 points, ie all indicators in the dynamics increased, and their values are higher than the norm.

The values of the class of indicators set by the bank depending on their values are given in table 9.

Thus, according to PJSC "Dashkivtsi" the first indicator C_{AL} , taking into account its actual value (0.86), is assigned to the 1st class; to the second to C_{RL} -1st class; to the third C_{CL} - 1st class; to the fourth C_{AT} - 1st class; the fifth indicator C_A -1st class.

Table 9

Distribution of indicators by classes

№ p/p	Indexes	Normative value	Distribution by classes		
			1-st	2-nd	3-nd
1	Absolute liquidity ratio $C_{A.L}$	0,2 - 0,35	0,2 and above	0,1 - 0,2	< 0,1
2	Rapid liquidity ratio $C_{R.L}$	0,5 - 1	0,5 and above	0,3 - 0,5	< 0,3
3	Current ratio $C_{C.L}$	2,0	2,0 and above	1 - 2	< 1
4	Asset turnover ratio C_{AT}	–	Accelerated	On one level	Trust
5	Coefficient of autonomy C_A	0,5	0,5 and above	0,3 - 0,5	< 0,3

* Source: [16]

According to the defined class of the borrower and the state of the relationship, the loan portfolio is classified according to the degree of risk and the category of the loan transaction is determined (Table 10).

Table 10

Classification of categories of credit operations

Borrower's financial condition (class)	Debt service by the borrower (group)		
	good	weak	unsatisfactorily
«A»	Standard	Under control	Substandard
«B»	Under control	Substandard	Substandard
«C»	Substandard	Substandard	Doubtful
«D»	Doubtful	Doubtful	Hopeless
«E»	Doubtful	Hopeless	Hopeless

* Source: [16]

As PJSC "Dashkivtsi" according to the assessment of the financial condition is classified as "A" and the state of repayment of the debt during the last six months is defined as "good" (except for agreements extended with the reduction of the borrower's class), such credit operation is classified as "standard" (if the borrower is classified as "A"). The same requirement for this borrower applies to loan agreements that are valid for less than six months at the date of classification of the loan portfolio.

The categories of credit operations "standard" and "under control" may not include soft loans. Preferential loans are loans provided to borrowers on more favorable terms than established by the internal documents of the bank, which determine its credit and accounting policies and comply with the laws of Ukraine.

To assess the credit risk of the borrower, you can use the national scale of credit ratings in terms of speculative and investment levels.

The borrower's credit rating characterizes the level of his ability to timely and in full to pay interest and principal on debt obligations.

Credit ratings can be short-term (credit risk in the short term - up to one year) and long-term (credit risk in the long term - more than one year).

Credit rating values range from "uaAAA" (highest creditworthiness) to "uaD" (default) - for long-term

credit ratings; within the mark "uaK1" (highest creditworthiness) to the mark "uaKD" (default) - for short-term credit ratings.

The credit rating outlook (positive, stable, or volatile) is a comment on the prevailing trends affecting the credit rating in terms of its possible (but not mandatory) change in the future.

At the end of the analysis determine the effectiveness of short-term and long-term loans.

One of the important factors that can significantly affect the accuracy of the analysis of the creditworthiness of the entity and the reliability of determining the class of the debtor is the impact of off-balance sheet risks. The issues of creation and functioning of the mechanism of analytical support for assessing the creditworthiness of the borrower, which can be considered as a component of the lending mechanism as a whole, in the economic literature are insufficiently studied.

Under the mechanism of analytical support for credit assessment, we will understand the interaction of subject-object and security subsystems, which together form an analytical system aimed at making management decisions on lending and determining future credit opportunities of the enterprise. We fully agree with the proposal of V. Vyhovskiy on the structure and mechanism of analytical support for assessing the creditworthiness of the borrower-legal entity (presented in Fig. 3) [17].

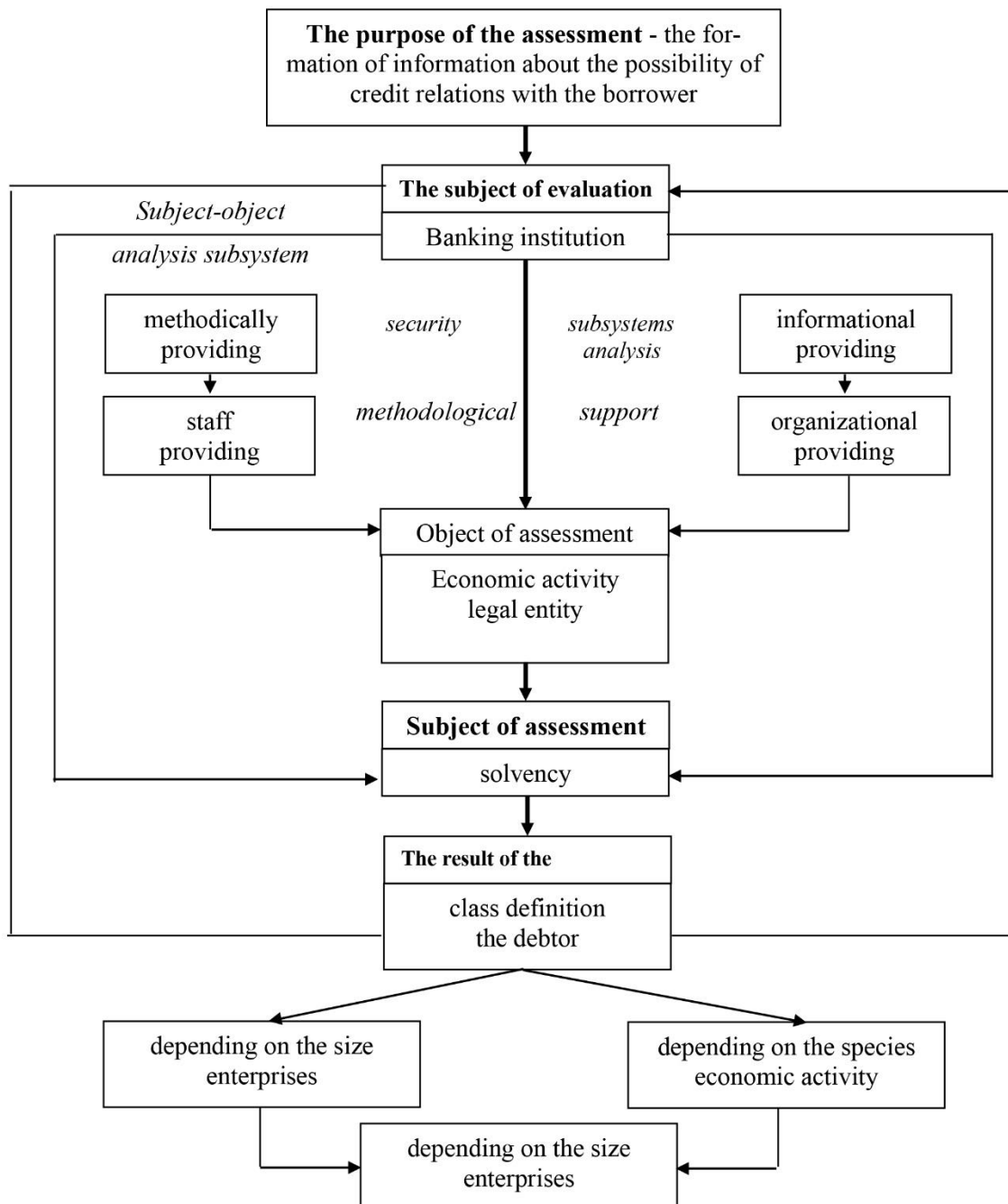


Fig. 3. The mechanism of analytical support for assessing the creditworthiness of the borrower-legal entity
* Source: [17]

Central to assessing creditworthiness is goal setting. For example, some authors argue that the analysis of creditworthiness is conducted in order to obtain the information necessary to make management decisions about the potential possibility of granting credit and the conditions under which it is carried out [18]. The purpose of assessing creditworthiness will be to obtain the necessary information about the potential for credit relations between the lending bank and the borrower.

Detailing the purpose of the proposed mechanism allows to form the following areas of credit assessment: 1) ensuring timely and complete repayment of loans; 2) effective management of the borrower's credit resources; 3) identification of the level of the credit risk of the borrower in order to reduce it.

We think that the proposed mechanism for assessing creditworthiness will increase the objectivity of management decisions on lending, improving the activities of credit departments of banking institutions, the formation of requirements for the financial condition of the borrower.

The functioning of the mechanism of analytical support for assessing the creditworthiness of the borrower requires the formation of appropriate methodological principles. In accordance with the current methodological support regulated by Resolution № 351, the bank determines the credit risk on assets in accordance with the following principles [10]:

1) the prevalence of the essence of active operations carried out by the bank over their form;

- 2) timeliness and completeness of credit risk detection;
- 3) the adequacy of the assessment of the amount of credit risk, which means the reliability and stability of the solvency of the debtor/counterparty;
- 4) minimization of credit risks;

- 5) taking into account the bank's own experience when assessing credit risk;
- 6) sufficiency and adequacy of the internal regulations (rules, procedures, control) developed by the bank. Assessment of the principles regulated by law provides an opportunity to improve them by clarifying and supplementing (Table 11).

Table 11

The main methodological principles underlying the methodological support for assessing the creditworthiness of the borrower

№ p/p	The name of the methodological principle	Its essence
1	Versatility	Maximum coverage of the evaluation of important indicators
2	Progressiveness	Application of foreign experience of evaluation
3	Objectivity	The basis of the assessment is formalized methods of analysis
4	Professionalism	Ensuring a high level of professional training of employees of the credit department who carry out the assessment
5	Speed (efficiency, timeliness)	The time spent on the analysis is minimal
6	Reality	Correspondence of the received estimation to a real condition of things
7	Information openness (transparency)	Creditworthiness is assessed on the basis of available financial statements
8	Complexity	Ability to comprehensively assess the creditworthiness of the borrower
9	Comparability	Ability to compare the results of the borrower's assessment with the assessment of the creditworthiness of another borrower's enterprise
10	Differentiated approach	Assumes differentiation of the received estimation on spheres and scales of activity of the borrower

* Source: suggested by the author

We think that the application of the principles clarified and formed by us in the implementation of the analytical process will contribute to the formation of a sound assessment of the borrower's creditworthiness.

There is a shortage of highly qualified credit workers in banking institutions, which is also the reason for the imperfection of the organization of an effective lending process. Modern client managers of credit departments must be able not only to apply credit rating systems but also to improve them in order to improve the quality of such systems. It is also necessary to highlight the problem of incompatibility of information, which is due to the instability of the legal framework.

We believe that solving these problems will help reduce credit risk, clear structuring external and internal information, increase the efficiency of banking institutions.

It should be noted that one of the reasons for the imperfection of the information support of the mechanism for assessing the creditworthiness of the borrower is the failure to take into account off-balance sheet risks associated with the provision (receipt) of guarantees. Therefore, we proposed to improve the borrower's questionnaire (the questionnaire of the first conversation with the client), providing 2 separate columns:

1. Data on the availability and movement of received guarantees and collateral.
2. Data on the availability and movement of provided guarantees and collateral.

We hypothesized that acting as a guarantor or principal for another company, the assessment of the borrower's creditworthiness may change. In this context, having analyzed the methodological support of credit-

worthiness assessment, we can conclude that it is advisable to improve the existing methodology taking into account the impact of off-balance-sheet risks on creditworthiness.

As practice shows, there is no single well-known classification of off-balance sheet liabilities. Their content is disclosed depending on the purpose of the study, for example, as objects of accounting. Class 0 "Off-balance sheet accounts" is used to reflect off-balance sheet items in accounting, in the Chart of Accounts for accounting of assets, capital, liabilities, and business transactions. The assessment of the borrower's creditworthiness is directly affected by such off-balance sheet liabilities as contractual obligations (derivatives - forwards, futures, options), as well as guarantees and collateral provided and received (business agreements, endorsements, acceptances, etc).

The developed methodology for assessing creditworthiness, taking into account off-balance sheet liabilities and rights, clarifies the indicators of liquidity and solvency, financial stability, turnover, which allows you to more realistically assess the creditworthiness of a potential borrower and make an informed decision on the loan.

Conclusions. Thus, it was determined that in the scientific literature there is no single view on the composition of information support for assessing the creditworthiness of the borrower. In particular, the most common is the division of information into internal and external sources, official and unofficial information obtained directly from the borrower, and information generated by banking institutions themselves. Based on a critical analysis of the existing classifications, the

composition of internal and external sources of information support was specified, the requirements for information about the borrower were detailed.

The use of a systematic approach to the survey of the creditworthiness of the enterprise allows the most complete study of both the creditworthiness of the enterprise and its management and business leaders to realize the benefits of scientific approaches to the organization and operation of the enterprise as a whole. We must recognize the fact that the methodology for assessing the creditworthiness of enterprises has no conceptual basis, which would be based on scientifically sound methods and economic and mathematical models. Their wide use would allow to carry out the comprehensive analysis of the activity of any enterprise at the qualitatively new level, and by that essentially reduced risk and increased a safety zone, ie a stock of financial stability.

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