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THE DIAGNOSIS OF FINANCIAL RESOURCES OF SMALL AND MIDLE SIZE ENTERPRISES (SME)

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Abstract: *The paper presents a method of diagnosing financial resources as part of small enterprise resources analysis. Starting from general knowledge regarding financial resources, its diagnose objectives and specific demand for small and middle size enterprises, the paper synthesizes a model to be used in diagnose analysis process. According to this model, we establish a specific method of evaluation for the two criteria: profitability-liquidity and security-risk.*
For each of these we present the tables with the financial indicators.
A scoring evaluation method is associated to this diagnose model in order to facilitate setting the business level in accordance to financial resources criterion. The score function with variables, coefficients and the main coordinates of their choice is also presented.
Following the diagnose score, the business level is established and few methods to improve are suggested.
Finally, the paper presents a case study of a company in the field of tourism. We assessed the business rate and setting the main conclusions following diagnose. We added the tables containing values of indicators for the two criteria and also the justification for the choice of coefficients significance and the conventional score assigned for each domain of analysis.
The main conclusions regarding the case study are closing the paper.

Key words: *financial resources, diagnosis analysis, profitability, liquidity, security, risk.*

1. INTRODUCTION

To perform in its activity any company has to face two constraints [1]:

- profitability-risk;
- financial resources balances.

Financial resources are the total financial capital that companies need to achieve all of the economic and social goals in a certain period of time.

Financial resources must provide enterprises the technical and material means necessary to carry not only the main functions of production, marketing and investment but also the secondary ones as supply, maintenance, personnel training and so on, in accordance with the general strategic plan.

Financial resources have to cover, on the one hand the cost of assets, represented by all tangible and intangible elements of the business process and on the other hand they have to bear the expenses requested by the whole activities.

Without financial resources the business performance can not be achieved in terms of continuity, stability and satisfaction of the owners. In this view, the financial resources are of three types [2]:

- communes; ensure business continuity by founding the stocks of row material, auxiliary material, finished product and all other stocks needed in production activity, until their final recovery by sale and cashing receivable. They also provide founds for work-related expenses like utilities, salaries, taxes and all other expenses, during the entire economic cycle;
- essential; ensure business stability by achieving a high level of product competitiveness. This category includes financial resources to improve the quality of product and services, personnel training, to reduce consumption and so on);
- strategic; ensure higher level of business return and profits. This category includes financial resources used to achieve strategic business development plans (investments, researches, product promotion)

In terms of patrimony, financial resources guarantee company's liquidity and solvency this way undertaking of business partners or creditors to collect debts or loans repayments.

Sometime financial resources are used to increase company's market value in view of future transaction (sales, merges) knowing that financial resources level is a barometer of market confidence in its work.

In terms of origin, financial resources (RF) cumulative owner's equity (CP) and capital attracted each other according to the relationship (1).

$$RF = CP + D_{nete}\,. \tag{1}$$

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where: D_{nete}= net indebtedness as difference between capitals received and granted

Owner's equity comes mainly from company's owners and profits and capital attracted incomes from banks, leasing companies, investment companies a.s.o.

According to experts, managers use owner's equity to finance projects when they believe that investors' views about project payoffs are likely to be aligned with theirs, thus maximizing the likelihood of agreement with investors. Otherwise, they use capital attracted [8].

Usually SMEs receive less financial resources than large enterprises. That is why the acces to attracted capital is more dificult and therefore limits company's posibilities of development and growth.

So the SME management must be conducted on the basis of accurate and objective evaluation of the financial resources in order to enable the implementation of clear and sound financial strategies to ensure their compliance with the organization's overall strategic plan.

Analysis of the financial resources seeks, through the interest in these resources, the meeting of two types of balance [13]:

- profitability-liquidity, which ensures the continuity of financial resources correlated to profitability level forecast; main indicators are those of the balance sheet, the income statement and expenses and the cash flow.
- security-risk, which assesses the ability of the company to finance the investment program from its own resources; assessing this balance allows the detection of early symptoms of malfunction in a firm but has the disadvantage of not recovering the full spectrum of financial resources;

In diagnose works, the two types of balance become two criteria that are evaluated differently depending on the specific activity.

To SME the security-risk balance is important in terms of the need to attract foreign capital and liquidity balance and to evaluate the potential profitability of the business and managerial performance.

2. DESCRIPTION OF METHOD

According to specialists the models in diagnose are communication ways between enterprise and experts designed to facilitate the knowledge of company and to increase the efficiency of improvement plans. A model allows experts to express a qualified opinion about the state of analyzed phenomena, based on dates collected and evaluated through specific methods [3].

Models in analysis are necessary to highlight the organization's strengths and dysfunctions [11].

Following a five star evaluation model for private and autonomous administrations companies [10] we apply a specific method to SME's financial resources diagnose.

The proposed method is based on the type of indicators and those evaluations are done through a scoring function.

In financial analysis, a score function represents a combination of financial indicators whose value, for a given company, allows predicting the risk of business [14]. In most of the cases, scoring functions is determined empirically to compare samples of companies in the same field of activity. The result is a linear function of indicators using coefficients empirically determined through statistic tests that calculate a static value assimilated to the diagnose score.

Using these functions the objectivity of evaluation is increased and involvement of specialists is reduced.

In the method proposed for diagnose of financial resources, a group of indicators is assumed to each of the two criteria.

Using conventional score and coefficients of significance assigned for each criteria, this method aggregates a diagnose score $\overline{DRF}$, according to equation (2), whose value is between 1 and 5 [2, 3, and 4].

$$\overline{DRF} = \frac{\sum_{i=1}^{2} P_{rf_i} \cdot c_i}{\sum_{i=1}^{2} c_i}. \quad (2)$$

P_{rf_i} is a conventional score assigned for each criteria of analysis. Its value represents the evaluation according to an increasing scale of five steps between total inadaptability and perfect adaptation.

c_i is the coefficients' significance of criteria. Its value, specific to each evaluated company, is given by experts, based on the level of significance in business, according to Table 1 [10].

Table 1

Coefficient significance of domains

Level of significance	Consequences of mismatch on enterprise activities	Value
Very high	Grave, at the level of whole activities	5
Major	Grave, at the level of single activity	2
Secondary	Isolated to one or more activities	1

Table 2

Conclusions rating scale following diagnose

$\overline{DRF}$	Business level	Improvement plan elements
0..1	Non adaptation	Stop the activity, sell useless assets and change business profile.
1..2	Adaptation insufficiency	Containment of costs to existing funds, restricting investments, looking for strategically investors.
2..3	Adaptation to limit	Own capital input, financial partnerships or attracting funds. Crediting is a solution but not in any condition.
3..4	Adaptation good	Financial development, including credits to support investment plan. Patrimony fusion for financial consolidation.
4..5	Adaptation very good	Development by absorption of business. Founding new areas of business, financial market investments.

According to the values of $\overline{DRF}$ we set the business level according to the financial resources criteria and the main coordinates of the improvement plan as shown in Table 2.

3. INDICATORS OF FINANCIAL RESOURCES

The diagnosis of financial resources uses indicators of booth profitability-liquidity and security-risk balance [2].

Indicators of profitability-liquidity balance are shown in Table 3. Primary data sources are the balance sheet (BC), the statement of income and expenses (CPP) and the intermediate operating balances (SIG).

Indicators of security-risk balance are shown in Table 4. Primary data sources are the balance sheet (BC) and the trial balance (BV).

Usually, information regarding financial statement is mainly obtained from the balance sheet (BC) and regarding performances is obtained from the statement of income and expenses (CPP) [9].

In diagnose is very important that primary sources reflect the reality at the evaluation date. That is why financial statements shall be adjusted especially in the significant impact positions assessed evaluation [5]. In this regard is recommended the audit of financial statements before diagnosis [12].

Given the fact that diagnose assesses post-factum the use of financial resources level, in the perspective of the development it should be evaluated also the company's capacity to mobilize additional financial resources. This assessment is difficult due to the diversity and heterogeneity, unpredictability and high perishability of the determinants of the phenomenon of which could be considered:

- willingness to invest of capital holders;
- the independence of capital;
- relationships between owners;
- relations with banks and other financial institutions;
- relationships with suppliers and their willingness to fund the business;

Table 3

Indicators of profitability - liquidity criteria

Indicators	Determination
Net profit or loss [RN]	According to BC
Turnower [CA]	According to CCP
Operating result [RE]	According to CCP
Value added [VA]	According to SIG
Net operating benefit [ENE]	According to SIG
Gross operating benefit [EBE]	$EBE = ENE + C_{am}$
Operating loans rate [R_{de}]	$R_{de} = \frac{I_{ts}}{St + Cr} \cdot 100$
Current liquidity rate [L_c]	$L_c = \frac{A_c}{D_{ts}}$
Return on owners equity [R_f]	$R_f = \frac{RN}{KP} \cdot 100$

Table 4

Indicators of security-risk criteria

Indicators	Determination
Net fixed assets	According to BC
Current assets [A_c] of which: - stocks [St] - receivables[Cr]	According to BC
Owner's equity [KP]	According to BC
Liabilities [D] of which: - current [D_{ts}] - long term[D_{tl}]	According to BC
Loans [I_t] of which: - current [I_{ts}] - long term[I_{tl}]	According to BV
Amortization and provision for loss [C_{am}]	According to BV
Self-founding capacity [CAF]	$CAF = RN + C_{am}$
Financial autonomy rate [R_{af}]	$R_{af} = \frac{KP}{KP + I_t} \cdot 100$
Financial stability rate [R_{sf}]	$R_{sf} = \frac{KP + D_{tl}}{KP + D} \cdot 100$
Global indebtedness rate [R_{ig}]	$R_{ig} = \frac{D}{KP + D} \cdot 100$
Global loans rate[R_{gi}]	$R_{gi} = \frac{I_t}{KP} \cdot 100$
Long term loans rate [R_{df}]	$R_{df} = \frac{I_{tl}}{KP} \cdot 100$
Loan repayment capacity rate [R_{cr}]	$R_{cr} = \frac{I_t}{CAF} \cdot 100$

The importance of these factors is higher in small and medium enterprises that are often forced to push the maximum limits of growth to improve their competitive position on the market. Since the information on those factors are reliable, an evaluation of the financial perspective can be made and is up to the analyst's to established the conclusion’s degree of accuracy.

Of interest in this analysis is also the value of indicators and their trend. While the value of indicators reflects the level of performance achieved, the trend reflects the management of performancee [6].

The selection of indicators is made by tacking into account the specifics of SME’s business.Thus, turnover value added and operating result are the most important internal sources of business financing. Also, given the low level of stocks and receivables, the current liquidity rate is important to evaluate the management of commune resources.

In terms of essencial resources, due to the low cost of accesing, current liabilities and loans and self-founding capacity (CAF), they become important sources to finance business. Their levels define business security and their trend reflects the management of risk.

Indicators like financial autonomy rate, global indebtedness rate and loan rates define SME’s strategic resources statement.

Table 5

Score significance following the profitability-liquidity criterion

P_{rf1}	Signification
1	**Insufficient financial resources to continue activity:** Turnover and value added decreases by over 10% in the last three years; Operating result is lost in the last three years; Current liquidity drops bellow 1;
2	**Critical level of financial resources:** Turnover and value added decreases with less than 10% in the last three years; Net loss in the last three years; Current liquidity rate is down in the last three years even value is up to 1;
3	**Financial resources to limit:** Turnover and value added increase less than inflation rate in the last year; Operating result increased and is profit in the last year. Net loss in the last year even decrease; L_c =1..1,5
4	**Stable financial resources:** Stable growth of turnover and value added but less than 10% in the last three years; Operating result is profit and increased in the last three years; Net profit in the last year; L_c =1.5..2; R_f >10%
5	**Solid financial resources:** Turnover and value added increase over 10% in the last three years; Operating and net profit in the last three years; $L_c > 2$ and $R_f > 20\%$

Based on the value of indicators and their trend, each criteria of the diagnose are scored in five steps according to Tables 5 and 6. The tables also give us the significance of scoring in terms of financial management. There we defined five meanings corresponding to the five steps, as follows:

1- Insufficient financial resources.
2- Critical level of financial resources.
3- Financial resources to limit.
4- Stable financial resources.
5- Solid financial resources.

4. CASE STUDY

Case study refers to a SME operating in the field of tourism. Basic activities are accommodation (hotel) and restaurant.

The hotel is located in the city center of an industrial town without major tourist attraction.

The main tourism branch is business and the customer demands for services are high and increasing.

On the market, the company is well anchored but its position is threatened by competition that rises quality standards through investments.

Company holds significant assets in the patrimony but activity is declining due to the high level of their depreciation.

In these conditions owners decided implementing a plan to modernized technical and material base in order to increase the level of activity and profit.

Diagnose is necessary in order to evaluate company's capability to mobilize financial resources to achieve the investment plan without harming current activity.

Company's financial statements, audited both internally and externally by experts, have a high degree of relevance in diagnose.

Diagnosis covers a period of three years. During this period, company has no resorted to loans for financing activity.

Table 6

Score significance following the security-risk criterion

P_{rf2}	Signification
1	**Insufficient financial resources to continue activity:** Net fixed assets decreased to zero; Adversely own financial resources $KP < 0$; $CAF < 0$ in the last year; Financial stability rate R_{sf} decreases continuously with over 10% each year or falls below 40%; Loan repayment capacity rate decreases with more than 10% each of the last year.
2	**Critical level of financial resources:** Stocks and receivable increase with more than 10% each of the last three years; Current liabilities decreased; Financial autonomy rate R_{af} decreases continuously in the last three years up to values below 40%; Self-founding capacity decreases continuously in the last three years; Indebtedness rates (R_{ig}, R_{gi}, R_{df}) increase by up to 10% each of the last three years;
3	**Financial resources to limit:** Fixed and current assets vary in the limit of +/– 10% in the whole period of analyses; Owners equity and financial stability are stable (+/– 10%); Financial autonomy rate R_{af} preserve the value between 50% and 60% in the last three years; Indebtedness rates vary in the limit of +/– 20% in the whole period of analyses;
4	**Stable financial resources:** Fixed assets increase or decrease due to amortization; Owners equity and financial stability increase in the whole period of analyses with more than 10%; Financial autonomy rate R_{af} increase continuously in the last three years and value is over 60%; Indebtedness rates (R_{ig}, R_{gi}, R_{df}) decrease by up to 10% each of the last three years; Loan repayment capacity stable;
5	**Solid financial resources:** Fixed assets increase due to investments made; Financial autonomy rate R_{af} increase continuously in the last three years and value is over 70%; Indebtedness rates (R_{ig}, R_{gi}, R_{df}) decrease less 50%;

The analysis was made by one expert during two days of work that include model design and conclusions.

Following these, diagnose is focused on profitability-liquidity criteria, which has a very high significance in terms of Table 1, without neglecting the security-risk which is a major criterion.

Considering this, coefficients' significance of the two criteria in diagnose is:

- profitability-liquidity, $c_1 = 5$;
- security-risk, $c_2 = 2$.

Table 7 present the values of indicators for the last three years following the profitability-liquidity criterion.

Table 8 presents the values of indicators for the last three years following the security-risk criterion.

According to our diagnose method, criteria is scored as follows:

- profitability-liquidity, $P_{rf1} = 4$;
  - turnover increase with 30% in 2011 and with 9% in 2012;
  - value added increases with 89% in 2011 and with 40% in 2012;
  - net and operating result are in profit in 2012 and in loss in 2010 and 2011;
  - liquidity rate continuously increases and the value in 2012 is more than 2;
  - return on owners equity continuously increase and value in 2012 is under 10%.
- security-risk, $P_{rf2} = 3$
  - fixed assets decrease in 2011 due to amortization and increase in 2012 due to investments;
  - stocks decrease in 2012 with 44% and increase in 2012 with 45%;
  - receivables decrease in 2011 with 20% and increase in 2012 with 32%;
  - current liabilities increase in 2011 with 3% and decrease significant in 2012 with 50%;
  - owners equity increases slowly (<10%)
  - self-founding capacity, negative in 2010 and 2011, increases and turns on positive in 2012;
  - not having resort to loans the financial autonomy rate is 100% and indebtedness rates are very small (< 5%);
  - financial stability is also high (> 90%) and increasing;

Table 7

Indicators of profitability-liquidity criteria

Indicators	2010	2011	2012
Net profit or loss [RON]	−562 228	−363 646	111 655
Turnower [RON]	1 083 455	1 417 402	1 544 060
Operating result [RON]	−624 731	−362 089	130 816
Value added [RON]	380 031	684 812	956 236
Net operating benefit [RON]	−374 692	−189 122	276 961
Gross operating benefit [RON]	−224 614	−2.286	392.021
Current liquidity rate	1.1	1.9	3.5
Return on owners equity [%]	−18	−11	3

Table 8

Indicators of security-risk criteria

Indicators	2010	2011	2012
Net fixed assets [RON]	3207263	3055622	3301271
Current assets [RON] of which:	300 985	531 922	489 165
Stocks [RON]	65 589	37 122	53 957
Receivables [RON]	179 375	142 334	188 704
Owners' equity [RON]	3 187 469	3 273 263	3621 907
Current liabilities [RON]	268.262	278193	141 523
Loans [RON]	0	0	0
Amortisation and provision for loss [RON]	150 078	186836	115 060
Self-founding capacity [RON]	−412 150	−176 810	226 715
Financial autonomy rate [%]	100	100	100
Financial stability rate [%]	92	92	96
Global indebtedness rate [%]	9	8	4

Diagnose score of financial resources computed with equation (2), is:

$$\overline{DRT} = \frac{4 \cdot 5 + 3 \cdot 2}{5 + 2} = 3.7 \,. \tag{3}$$

According to Table 2, the situation corresponds to adaptation good of the financial resources to the strategic plan. The main conclusions are:

- company is able to finance the investment plan;
- internal resources can be completed by loans if it requires modernization plan;
- loans are an option due to their high absorption capacity.

5. CONCLUSIONS

Financial resources provide the continued development without any interruptions of activity, stability of patrimony and can determine owner satisfaction by the benefits obtained as result of their efficient management.

Financial resources extracted from the internal environment of the company, also called owners' equity, are the result of owner's contributions and of company's activity. The cost of their use in one activity is the oportunity cost evaluated by giving up financing another activity.

Financial resources extracted from the external environment, also called foreign capital, are the result of lending activities trough specialized companies. Of theese, bank financing is the large and most important source to SMEs [7].

Their cost is usually high and dependent on market interest rate and the absorption capacity of the company that influence the company's negotiating power with creditors. It is known that a company with a solid financial situation has a high capacity for absorbing money market loans and can negotiate lower cost credit agreements.

Used efficiently, financial resources can increase the business value by financing competitive strategic growth plans. At the same time, inefficient use of financial resources can have serious consequences on the company, which is the cause of most activity stops.

Large enterprises receive significant financial resources but SMEs, due to lower capitalization, are required to manage financial resources with maximum efficiency, which is an important competitive force in the market.

Diagnose model for financial resources as presented above, evaluates the financial resources of SMEs operative situation in the perspective of implementing their strategic plans.

There are two criteria of evaluation:

- profitability-liquidity; refers to the use of owners'equity on the consideration that an increase of return may result in a decrease in liquidity;
- security-risk; refers to the use of foreign capital for financing activities, against owners' equity.

The method of analysis used is that of financial ratios based on company annual financial statements and intermediate operating balances. Using these reports, the diagnose gains objectivity and workability evaluation.

The method of analysis is supplemented by a mathematical model of scoring (2) which generates extra objectivity in interpreting the results by assessing the phenomenon on a rating scale from 1 to 5 steps (Table 2). So, this is a model that allows synthesizing the statement in one single diagnose score and solves the problem of short analysis time, requested by most beneficiaries.

According to the mathematic model there are two variables that determine the score function: the conventional score assigned for each criteria of analysis, P_{rf_i} (table 3,4) and the coefficients significance of domains, c_i (table 1). Based on these the diagnose score of financial resources is calculated with a value between 1 and 5. Based on this value experts can assign a rating to business in terms of financial resources between "non adaptation" and "adaptation very good" (Table 2).

Finally, according to the method we set the main coordinates of the improvement plan (Table 2).

In the case study the method of diagnose was applied on a tourism company in order to check the available financial resources in terms of financing the modernization assets plan.

The method as described allows obtaining the correct diagnose in terms of time and budget limits. To the presented case study we estimated the reducing of time with 40% and the budget with 10%.

As future developments of research in the field of diagnose of financial resources, we mention:

- designing specialized models for the main specific activities to SME: commercial, tourism, transports, buildings;
- designing specific forms to facilitate the collection of dates;
- based on experts experience, development of specific guidelines to evaluate the results and assigning the conventional diagnose score in terms of high objectivity;
- training experts in the communication field with companies to improve quality of collected data and to facilitate the implementation of the improvement plans.

REFERENCES

[1] I. Abrudan, D. Candea, *Manual de inginerie economică* (Handbook of engineering economic), Editura Dacia Cluj-Napoca, 2002.

[2] N. Boian, V. Mărăscu Klein, *Analiza diagnostic a intreprinderilor mici si mijlocii* (Diagnosis analysis of small and middle size enterprises), Editura Universităţii Transilvania din Braşov, 2011.

[3] N. Boian, M.A. Boian, *Diagnose of technical resources of small and middle size enterprises (SME)*, Proceedings in Manufacturing Systems, Vol. 7, Iss. 3, 2012, pp. 183–188.

[4] N. Boian, M.A. Boian, *Diagnosis of human resources of small and middle size enterprises (SME)*, Proceedings in Manufacturing Systems, Vol. 7, Iss. 4, 2012, pp. 217–222.

[5] D. Manaţe, *Diagnosticul şi evaluarea întreprinderilor cotate şi necotate* (Diagnosis and evaluation of listed and unlisted enterprises), Colectia Biblioteca ANEVAR, Bucharest, 2002.

[6] M. Niculescu, *Diagnostic global strategic – Diagnostic economic* (The global strategic diagnosis – The economic diagnosis), Editura Economică, Bucharest, 2003.

[7] Financial Inclusion Experts Group/SME Finance Sub-Group, *Scaling-up SME access to financial services in the developing world*, G20/ Seoul Summit, 2010.

[8] A. Dittmar, A. Thakor, *Why do Firms issue Equity?*, The Journal of Finance, vol. LXII, No.1, February 2007.

[9] A. Trifan, N. Boian, C*ontabilitate financiară şi manageri-ală; curs postuniversitar de masterat* (Financial and managerial accounting; post graduate course Master), Editura Infomarket, 2008.

[10] M. Calotă et al., *Metodologia efectuării analizelor-diagnostic la societăţile comerciale şi regiile autonome* (Performance analysis and diagnosis methodology to private companies and autonomus administrations), CEMATT, Bucharest, 1993.

[11] E. Burduş, *Managementul schimbării organizaţionale* (Organizational Change Management), Editura Economică, Bucharest, 2003.

[12] CAFR, *Standarde de audit intern-suport de curs* (Internal Audit Standards-course), Bucharest 2007.

[13] T. Atamer, R. Calori, *Diagnostic et decision strategiques* (Diagnosis and strategic decision), Editura Dunod, Paris, 2003.

[14] B. Colasse, *Analiza financiară a întreprinderii* (Financial analysis of enterprise), Editura Tipo Moldova, Iaşi, 2009.