Current Financial Diagnostics of Enterprises

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Abstract: In this paper we are discussing the concepts and components of the Current Financial Diagnostics of Enterprises that is being developed at the Belarusian State University. Such system can be successfully employed either for training experts in financial analytics and financial management or for financial managers and financial directors at an enterprise for the effective financial decision making.

Keywords: Financial analysis, company financial performance, decision making support system, ratio analysis, financial leverage, business evaluation.

1. INTRODUCTION

The world economy stagnation, world financial crisis and tight financial standing of enterprises in many world countries are requiring the application of current financial analysis techniques and current financial diagnostics of enterprises.

The market environment uncertainty in the Republic of Belarus is requiring from entrepreneurial structures to be involved in in-depth study of business processes taking place at an enterprise. The entrepreneurial subjects are operating under constantly changing conditions provided for by a variety of relations generated between such The entrepreneurial subjects and other economic operators. The fuzziness of legal security, low-developed market and information infrastructures are introducing a strong destabilizing factor in the processes of economic activity of such entrepreneurial subjects. Thus, the external environment uncertainty, in which they are operating, is provided for by both objective causes related to the market nature of any present-day national economy and the transition period outlay.

The financial analysis is making it possible for a company's management to control the money turnover, generate and use financial resources, as well as to predict the probability of crisis situations arising and, therefore, to eliminate bankruptcy risk.

There exist the following financial analysis techniques:
- horizontal (or trend) analysis;
- vertical (or structural) analysis;
- factor analysis;
- comparative analysis;
- ratio analysis;
- integral analysis.

Financial ratios analysis is the one most widely used. It is assisting in revealing the symptoms of the hidden facts, problems that need pervasive investigations.

The main source of information for financial analysis is the data incoming from accounting and management accounts.

The data relating to the company's property (assets) and sources of its income (liabilities) effective as at the beginning and the end of a period under review, represented as an analytical balance.

The data relating to the company's activity effective as for a period under review, represented as an analytical profit-and-loss statement.

One of the most important problems for the company's management and financial department, especially while facing the world financial and economic crisis, is current computer-aided financial diagnostics of the company and the monitoring of its activity from the point of view of reasonable managerial decision-making. The financial decision-making support system (FDMSS) is assisting in finding solutions related to the above problems in due time and improving the efficiency of company activities [1, 2], determining weak links in business and improving the efficiency of company activities [1, 2] by making well-grounded financial decisions.

2. LAYOUT FUNCTIONAL CHARACTERISTICS OF FINANCIAL DECISION-MAKING SUPPORT SYSTEM

FDMSS has the following functional abilities: funds flow forecast with an ability to be updated; bank funds condition analysis; account payable analysis; debt recovery analysis; values and evolution of the major financial indices analysis (number of days of accounts receivable and payable, resources, gross and operational profit rate, make-out point, etc.); creating and analyzing sales reports; creating and analyzing operational (weekly) commercial statements; expense analysis; budget analysis

FDMSS is employing the following information source, available at the company as accounting data for several periods (3 – 4 years, several quarters or current data qualified by each month): the Company's financial statement; profit-and-loss statement; funds flow statement.

Given the above data, FDMSS is performing an analysis and generating decisions relating tot the company's financial performance in the form of interest-bearing rates, ratio values and text messages – conclusions about the behavior of some index.

FDMSS is containing the following sections:
1. Horizontal (trend) analysis implies comparison of financial rates during some period of time to determine

the company's development trend.

Vertical (structural) analysis implies the determination of major financial rates structure to study thereof more properly.

To analyze and make the conclusions the system chooses rates with deviations having the biggest values that happened within relevant periods.

2. The Company's financial stability. Having assets and liabilities statement as a basis, the financial stability mode is determined: absolute, normal, minimal and critical, and financial stability considering time: current, short-term and long-term outlook.

3. Statement liquidity. The Statement liquidity analysis is including comparison of payables, qualified by liquidity degree, and liabilities, qualified by dates of their recovery, ordered by dates ascending.

4. Rate analysis of the company's financial performance. About 80 rates (indices) are qualified in 8 groups:
- operational analysis;
- operational costs;
- liquidity and paying capacity;
- funds management quality;
- business activity;
- company financial stability and flexibility;
- profitability;
- debt services;

5. Bankruptcy probability measurement:
- Belarusian method;
- Russian models;
- Altman models and other models.

6. The Influence of financial control handles on values of important indicators of a company's activity measurement:
- financial control handles;
- operational control handle;
- conjugated control handle;
- "Dupont" model.

7. Forecasting of the values for the most important financial and economic indices of company activities.

3. FINANCIAL DIAGNOSTICS

In what way are we making a step from analytical activity to the problem diagnosis? How do we make financial analysis goal-oriented, by transforming it from the most important instrument for financial documents and reports quality check to the solid basis for financial diagnostics, core of which lies in the estimation of quality of financial decisions made by the company management?

This paper is containing a description of one of the possible alternatives for analytical activity in the sphere of finances that brings us closer to the understanding of the essence of financial policy. The prototype of this alternative was a new model of financial analysis, elaborated by the experts from New York Society of Security Analysts, world-wide known for certifying independent financial analysts and awarding them with CFA (Certified Financial Analyst) degree.

The described system represents international "standards" of the modern financial analysis and implies a certain sequence of actions, including:
1) elaboration of a concept of comparative analysis and choice of the basis for comparing analytical ratios;

2) carrying out trend analysis of ratios;
3) defining a general size of financial documents;
4) calculating inner liquidity ratios;
5) calculating operational performance and profitability ratios;
6) factor analysis of profitability employing Dupont investment model;
7) risks estimation: of the business, financial and operational ones;
8) developing dynamics analysis and estimating growth potential.

Special attention here is given to the concept and simulating sustainable development, that underlie the growth potential estimation.

Size and quality of the documents. The sequential studies of contemporary analytical system are assisting in determining its several important peculiarities, the implementation of which brings financial analysis closer to the financial diagnostics. If the first three parameters of the above system are quite conventional, because what is at issue is: a) generation of a well-grounded basis for comparison; b) construction of inner dynamics of ratios basing on the principles of horizontal analysis; c) implementation of vertical analysis for two major financial documents – the rest points can be surprising due to their unusual phrasing, structure and analysis sequence, because of unusual explanations of conventional definitions and phenomena of financial management, and finally because of showing up new ways of analytical activity, which have never belonged to financial analysis before, and were simply unknown to the most of the analysts.

Ratios comparative analysis as it is generally understood, if not considering imperative analysis, based on rates, is neither more nor less than comparison of computational ratios with their average branch-wise values. Specialized agencies publish periodical statistical article collections that can be used for the comparative analysis.

To make the comparative analysis to be more efficient, modern financial management practice suggests generating a company's clusters with homogenous features, including similar techniques for measuring profitability, amortization, resources, similar-sized companies, companies, being in one and the same phase of development, and so on, after that it's suggested to study strong and weak sides of every cluster. There are several ways to do that.

The first way is reduced to alternative comparing a cluster that is characterized by average values, computed, for instance, for three years or for eight quarters within two years or for 12 months within one year. Everything depends on the fact how reliable and, mainly, how stable are historical data or those for a previous period. The Compasny's data are compared with average characteristics of a cluster, and such alternative comparison is in itself the e analysis of deviation from average values. The second way is representing a comparison of companies within one cluster. In such case there are eliminated all drawbacks of the conventional comparison analysis. Companies are compared following a well-known set of indices; sometimes additional ratios are applied, most commonly they are money or mixed

measures employed to assess credit exposures. The third way is probably the most intricate. It is assuming ranking companies within a cluster. However in such case it is not quite clear what criterion should be employed while performing such rating? Unfortunately the practice of post Soviet financial management yet is not easily perceiving such proposals.

For implementing current financial diagnostics we have selected a procedure of comparing values of indices of an enterprise with average values of enterprises within a cluster. The concept of current financial diagnostics offered by the authors is differing from similar conventional systems in the aspect that a user can conduct such diagnostics within short periods of time (from one or several days to a month).

Trend analysis is related to examining the dynamics of financial ratios. The employment thereof makes it possible to partly abandon the comparative analysis, being inseparably connected with constructing a comparison basis. In the trend analysis case we're talking of examining inner dynamics of financial ratios, of selecting an "an ideal" ratio and comparing it with all ratio values coming after such "ideal" one.

4. PRODUCTION RULES

Production rules is one of the most popular techniques of knowledge representation in FDMSS [1].

Production rules has the following form:

IF <conditions> THEN <conclusion>.

The "conditions" part can contain several relations, connected by the logical operations AND($\wedge$), OR($\vee$) or NOT $\neg$.

IF x>a AND y<b OR z>c THEN conclusions d

Examples from the area of enterprise financial analysis:

1) IF revenues grow AND revenue growth rate is exceeding a prime cost growth rate THEN growth of company financial performance;

2) IF assets rise AND circulating assets grow AND revenue grows THEN growth of company financial performance;

The following examples of relations appearing in the conditions can be given (from the beginning to the end of a period):

- circulating assets increase;
- accounts receivable decreases;
- net gain increases;

Thus, the core of the financial analysis procedure is a set of production rules, pursuant to which FDMSS makes the conclusions basing on truth.

It seems evident, that one production rule is not sufficient for making a conclusion on the company's financial performance.

In general a great number of such conclusions have to be considered. If these conclusions agree, or almost agree, the system is generating a final conclusion. If the conclusions received do not agree, the system gives out a positive and negative conclusion with the condition of production rules to an expert (a financial analyst). With due account of such data, an expert should formulate the final conclusion.

5. IMPLEMENTATION OF FINANCIAL DECISION-MAKING SUPPORT SYSTEM

Nowadays it is very difficult to manage any medium to large organization successfully without employing an enterprise's computer-aided resource planning systems. Recently there were developed several consolidated ERP systems, which are involving various components including Financials, Distribution, Human Resources Backbones; Supply chain management; Decision Support Systems, etc. One can name SAP, Oracle Applications, Infor Global Solutions, Microsoft as the largest ERP vendors worldwide. Subject to indisputable advantages of the above software all of these products are extremely expensive and difficult to be embedded and supported.

At the organizations not operating ERP systems financial managers and accounting officials lack of some simple, easy-to-start, freeware product which is sufficient for understanding financial and balance statement analysis and applying the analysis data to organizations' management solutions. In order to meet these goals the Financial Management Helper application program has been developed on SBMT financial subdepartment.

The application program is based on Oracle XE freeware database engine as a back-end, the front-end is a Rich Web Application created using Oracle Apex software. The principal design of the application is shown in Figure 1.
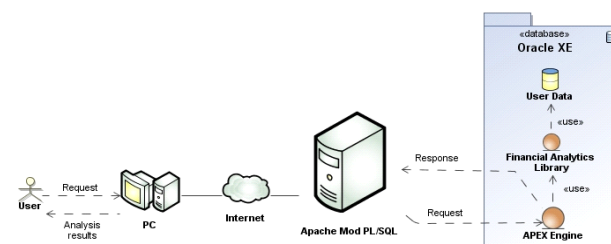

Fig.1 – Application principal design

The chosen design scheme excludes a necessity of installing any software and makes it easy to get started for using the application, the only things essential are valid balance and profit-loss statements and Internet connection. The core software features include (Figure 2):
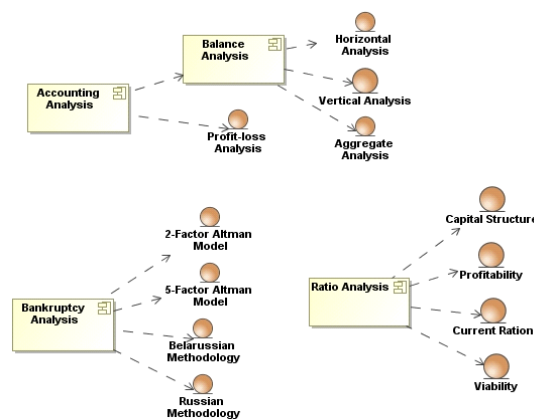

Fig.2 – Core software features

1. Balance statement analysis including the following procedures: vertical analysis, horizontal analysis, aggregate analysis;

2. Profit-loss statement analysis;

3. Bankruptcy analysis including the following methodologies: Belarusian methodology, Russian methodology, Altman Z-Score Financial ratios;

4. Ratio analysis comprising current ratio, capital structure, financial viability, profitability analysis.

The application implies several interactive facilities:

1. Highlighting weak and strong areas in balance profit-loss, and ratio analysis.

2. Predicting bankruptcy situations based on the bankruptcy analysis results.

3. Visual time history of ratios variations.

4. Training "what-if" feature: balance or profit-loss parameters can be changed in real-time mode with immediately responding ratios and interactive dynamics history.

All these application features are aimed at assisting financial and accounting official to make managerial solutions based on up-to-date management and financial accounting techniques.

A further goal for the development is to add some decision support features which could serve the management level of the organization and assist to make decisions, which may be rapidly changing and not easily specified in advance.

6. REFERENCES

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