THE USE OF QUALITATIVE VARIABLES IN THE RISK ASSESSMENT

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Abstract: In recent decades, the importance of qualitative variables in the assessment of the company's risk has grown considerably, due to the growing importance of intangible assets. Currently, it is believed that the intangible assets are even more important than the tangible assets. The measurement of intangibles and their inclusion in the risk analysis became therefore mandatory. The financial ratios which were traditionally used to point out the financial distress are no longer sufficient. As a result, the classical score functions had to be adapted which led to other difficulties, related to the evaluation of intellectual capital. This paper presents the general considerations regarding the use of qualitative variables in the risk analysis and the global concerns in this respect. It is also presented a model of bankruptcy risk analysis based exclusively on qualitative variables.

1. INTRODUCTION

In recent decades, the importance of intangible assets (also called intellectual capital) in the evaluation of the performances and the risk of the companies has increased considerably. Currently, it is considered that the intangible assets are even more important for an enterprise than the tangible assets. This is emphasized by the growing gap between the market value of the companies and the value of tangible assets. The advantageous purchase or sale contracts, the qualified employees, the information held, the innovation capacity, all these are crucial to business success in certain industries.

Unlike the tangible assets whose valuation and recognition in the balance sheet are easy to achieve, the intangibles are more difficult to identify and assess. Therefore the balance sheet only recognizes a small part of the intellectual capital a company holds, according to the law regulations.

2. LITERATURE REVIEW

R. Petty, S. Cuganesan, N. Finch and G. Ford[45] summarized the results of several researchers and concluded that three main components of intellectual capital can be identified:

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[45] R. Petty, S. Cuganesan, N. Finch şi G. Ford, *Intellectual Capital and Valuation: Challenges in the Voluntary Disclosure of Value Drivers*, Journal of Finance and Accountancy, http://www.aabri.com/manuscripts/09177.pdf

- *Human capital*: knowledge, skills, training, education and experience of the staff;
- *External capital*: relationships with customers and suppliers, brands and reputation;
- *Internal capital:* knowledge related to business processes, patents, results of R&D.

The components of intellectual capital are difficult to estimate. Qualitative variables have to be used in this respect as the classical measures cannot be adapted to capture the intangible assets of the company. K.E. Sveiby[46] reviewed the assessment tools of the intellectual capital from the specialized literature and concluded they can be divided into four approaches:

a) **Direct Intellectual Capital Methods** - identify and evaluate the components of intellectual capital individually or by aggregating them into a coefficient;
b) **Market Capitalization Methods** – the intellectual capital is the difference between the market value of the company and the shareholders' equity;
c) **Return on Assets Methods** - calculate the difference between the average return on tangible assets of the company and the average return of the industry, which is further converted into the market value of intellectual capital through the capitalization method;
d) **Scorecard Methods** – use scorecards and graphs in order to identify and evaluate the components of intellectual capital through indicators or indices.

The first three methods have the advantage of evaluation in monetary units of the intangible assets. The disadvantages are related to the inherent limitations of the methods, namely the estimations of the earnings, market distortions, the difficulty of estimating the discounting rate etc. The scorecards methods are the most subjective as they are mainly based on decision makers' assessments. At the same time the comparisons between companies are more difficult to make with the help of these methods.

Some of the most popular tools for measuring the intellectual capital are the scorecard, Sveiby's Intangible Asset Monitor and Skandia Navigator.

The balanced scorecard was created by Kaplan and Norton as a management and strategic planning tool so that the organization aligns its strategy to the operational activities. The authors have combined the classical financial indicators with the qualitative ones in order to get an accurate image of the overall performances of the company. The balanced scorecard reflects the performance from four points of view (perspectives)[47]:

- *Learning and Growth* - this perspective emphasizes employee training as the only depositories of knowledge within the organization. The rapid technological progress requires the involvement of employees in continuous education programs, which can provide success for the company. The distinction between learning and training is also highlighted,

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[46] K. E. Sveiby, *Methods for Measuring Intangible Assets*, http://www.sveiby.com/articles/ IntangibleMethods.htm

[47]

http://www.balancedscorecard.org/BSCResources/AbouttheBalancedScorecard/tabid/55/Default .aspx

as the authors consider that, at the organizational level, learning is more important than training.

- ***Internal business processes*** - regard issues related to the way of running the business, allowing managers to identify the key internal processes for the development of the organization;
- ***Customers*** - focus on customer and its needs. The ways of satisfying the customer requirements are a major influencing factor for the future success of the business;
- ***Financial*** - the use of qualitative variables alongside with the financial indicators was considered a necessity in view of getting a complete picture of management performance and of how to meet the financial expectations of stakeholders. It is, however, considered the inclusion of issues beyond the classical range of indicators such as risk analysis and cost-benefit analyzes.

The balanced scorecard has the advantage of focusing the attention of managers on intangible assets considered as a source of generating long-term value to the organization, to the detriment of traditional financial indicators that rather reflect the short term performances.

Intangible Asset Monitor was conceived by K.E. Sveiby in 1994. It is a simple tool designed to be easy to apply, based only on intangible assets that are important to the company. The system sets as a goal to point out in a complete and realistic way the performances of the company and its potential for future development.

Sveiby classifies the intangible assets into internal capital, external capital and skills of employees. For each type of capital there are defined indicators of growth, indicators of renewal/innovation, indicators of efficiency/utilisation and indicators of risk/stability.

In order to be easy to apply, the author recommends that an organization should only use a few indicators from each category. By calculating the indicators in the model for several consecutive periods, one could notice an increase or decrease in the value of the firm's intellectual capital on the three components.

Skandia Navigator is a system for the valuation of the intangibles developed by Edvinsson and Malone in 1994. The two authors have considered the value of a company is given by the relationship between the financial capital (seen in the traditional way) and the intellectual capital. The latter includes human capital and structural capital.

The human capital is given by knowledge, skills, know-how, innovation capacity, the culture and philosophy of the company. The human capital is closely linked to the organization's staff.

The structural capital includes hardware, software, databases, organizational structure, patents, trademarks etc. The structural capital is divided into customer capital and organizational capital. The organizational capital includes innovation capital (intellectual property rights) and capital related to internal operational processes. Unlike the human capital, the structural capital can be sold.

3. A RISK ASSESSMENT MODEL BASED ON QUALITATIVE VARIABLES

The overall assessment of the risk began in the late 60's with the creation of the first score function with the help of the discriminant analysis. This led to simple models, easy to apply by external stakeholders, based on data published by companies.

In the 60'-70', such models were sufficient to assess the bankruptcy risk. The deterioration of the financial ratios further influences the overall score calculated for a company using the score function. Later, however, the dematerialization of the assets increased the importance of the intangible assets that have exceeded the value of tangible assets. Thus the valuation of intangible assets and their inclusion in the bankruptcy risk analysis became mandatory. The financial ratios that emphasize the way the tangible assets are affected by the state of health or distress are no longer sufficient, as these assets are only 10 to 30% of the market value of the company.

Nowadays, the inclusion of intangible assets in this process has become a necessity. The banks and the rating agencies were among the first to have developed and implemented such mixed models, which take into account both the quantitative and the qualitative measures. The adaptation of the classical scores to this process implies, however, other issues. They were specifically developed for external users who only have access to the financial statements published by the company. In order to assess the intangibles it's necessary to apply questionnaires to the company's employees, to carry out discussions with the key personnel in the company, to analyse the strategies and the policies implemented by the company etc.. This requires a large volume of work and getting access to confidential information, inaccessible to most of the public.

The measurement of the qualitative variables, according to a conventional scale, is impossible to be made by a stakeholder who does not know the company under evaluation. Most of the times, the scoring functions are used by potential investors from the market, in order to develop the investment decisions. They don't have access to information so as to use complex models based on qualitative variables.

The Romanian literature dedicated to the use of qualitative variables in building the risk assessment tools is still in its early phases. These tools are generally restricted to banking models. The reason is the difficulty to identify and evaluate the intellectual capital for Romanian companies both by internal and external users of information.

Banks may assess any issue that might influence the credit risk of their customers. As well, the banks can request and get all of the information they need from a company, both quantitative and qualitative, which is then included in the insolvency risk analysis models. The range of qualitative variables considered may be larger or smaller, depending on the importance given to these variables and on the expected impact on the risk.

Further below there is a model developed to evaluate the bankruptcy risk, based entirely on qualitative variables:

Table no. 1

Section	Weight of section	Qualitative variable	Weight of qualitative variable
1. Management	35%	1.1. Business strategy	30%
		1.2. Innovation capacity	25%
		1.3. Organizational flexibility	15%
		1.4. Resource efficiency	15%
		1.5. Computerization degree	15%
2. Human resources	30%	2.1. Managers	60%

Section	Weight of section	Qualitative variable	Weight of qualitative variable
		2.2. Staff	40%
3. Stakeholders	20%	3.1. Customer relationships	25%
		3.2. Supplier relationships	25%
		3.3. Investor relationships	25%
		3.4. Competitive positioning	25%
4. Sustainable development	15%	4.1. Training programs for employees	50%
		4.2. Accidents at work and occupational diseases	25%
		4.3. The impact of operational activities on the environment	25%

The weighting coefficients are determined in a subjective manner and are of two categories: coefficients of variables and coefficients of section. Each qualitative variable is conventionally assessed on a scale from 1 to 5. The grade 5 signifies the most favorable rating to the company (the lowest risk).

Overall, the model contains 14 qualitative variables, divided into four sections:
- Management;
- Human resources;
- Stakeholders;
- Sustainable development.

The Management section is the most important, with a coefficient of 35%, and is evaluated using five measures:
- *Business strategy* - regards the existence of a business strategy, how the strategy is implemented through current operational measures, how realistic is the strategy, how clear the strategic objectives are defined;
- *Innovation capacity* - regards the importance given to the creation of new products and technologies, the budget of R & D, the efficacy of R & D activity, the market success of new products released, related to the market demands and competition achievements;
- *Organizational flexibility* – assesses how quickly the company adapts to environmental opportunities and threats, if the organizational structure changes;
- *Resource efficiency* – means the global assessment of how the internal resources are been used (material, human, financial, informational), respectively the ratio between outputs and inputs;
- *Computerization degree* - aims to assess the IT infrastructure (hardware, software, communications), the extent to which the company uses IT equipment and solutions to conduct current operations, the software obsolescence, the way the software meets the requirements.

The Human resources section has a relative importance of 30% and is estimated by:
- *Managers* - are one of the key elements that determine the risk of a business and are appreciated by knowledge, skills, know-how, attitude, leadership;

-   *Staff* - refers to knowledge, skills and attitude to work, qualifications, correlation between qualifications and job requirements, stability, misbehavior, unexcused absences.

The Stakeholders section accounts for a 20% weight, regards the interaction between the company and the external environment and includes:

-   *Customer relationships* - is assessed by the degree of satisfying the customers' expectations, the delivery timeline to customers, the quality of products delivered, the bargaining power of customers, the high dependence on a small number of customers, the receivable collection period, the delays in collection;
-   *Supplier relationships* - regard the degree of satisfying the suppliers' expectations, the supply timeline, the quality of raw materials, the bargaining power of suppliers, the dependence on suppliers, the collection period, the penalties paid;
-   *Investor relationships* - aims to analyze the company's ability to draw funds from investors, the remuneration the company pays to creditors and shareholders, the financial dependence on the creditors, the terms of loan contracts, the relationship between managers and the board of directors or shareholders;
-   *Competitive positioning* - is assessed by the market share, the competitive advantages, the number and the strength of competitors, the threats of competitors, the relations (cohesion or rejection) with the main competitors, the barriers to entry into the industry.

The Sustainability section has a 15% weight and includes the following qualitative variables:

-   *Training programs for employees* – regard the company's policy for training the employees (courses conducted for employees, staff trained, frequency of courses, amounts spent on these programs, the increasing labor productivity measured after completion of the courses);
-   *Accidents at work and occupational diseases* - is suitable only for certain industries and assesses the frequency and severity of accidents at work and occupational diseases, the occupational safety budget, the health insurance programs;
-   *The impact of operational activities on the environment* - aims the toxic or polluting emissions, the biodegradability and recyclability of products, the energy, the recycling of raw materials, the number and variety of eco or organic products.

After calculating the score, the company can be classified into one of the following risk categories:

-   class A: (4-5];
-   class B: (3-4];
-   class C: (2-3];
-   class D: (1-2];
-   class E: (0-1].

Class A means the lowest risk while class E reveals a high risk.

The risk evaluation system previously proposed is part of the tools developed in the literature for the valuation of the intangible assets. Far from aiming to include the full range of intellectual capital components, the model covers, with the help of the

qualitative variables considered, most of the intangibles of the company. The model is designated to be easy to apply and to integrate into the organization's management systems, allowing a rapid highlighting of its current progress.

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