

A Multicriteria decision aid method for the evaluation of Financial Credit Management

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Abstract

Credit plays an important role in the lives of many people and in almost all industries that involve monetary investment in some form. The latest, credit evaluation decisions are important for the financial institutions involved due to the high level of risk associated with wrong decision. The process of making credit evaluation decision is complex and unstructured.

So, Many business researchers have traditionally used statistical techniques for credit analysis. Statistical methods frequently employed in credit analysis include discriminant analysis, logit, and probit method. From the 1980s, many researchers studied to apply the artificial intelligence techniques such as artificial neural network, inductive learning, case based reasoning, and genetic algorithms.

The credit evaluation can be faced as a multicriteria problem as its modeling includes the main characteristics of multicriteria problems. Specifically the problem is characterized by:

- multiple criteria,
- conflict situation between them,
- complex evaluation process that is subjective and ill-structured, and
- introduction of financial decision makings in the evaluation process.

The decision makings need methods and models as tools to support the decision process involving the credit Evaluation. For them, it is clear that these decisions have to be based not only on "classical" financial ratios or on any transformations of them. Although, the financial ratios information has the ability to aim prediction processes, it provides a, more or less, "historical" evaluation of firms' performance and not the real present situation of a firm, that decision makings

would ask for, in order to arrange predictions and make up their mind.

A good number of authors are in favor of introducing qualitative rather than financial criteria in credit evaluation. Qualitative characteristics such as quality of management, market trend, market share, social importance, technical capacity, and etc., that usually are of a discrete form, are considered much more efficient to describe the performance of firms than some financial characteristics. Qualitative variables are difficult to be employed by the classical discrimination methods and AI techniques; even though there are some studies on the use of qualitative variables.

From their characteristics, Analytic Hierarchy Process(AHP) method has the ability to manage with qualitative criteria. The evaluation of the firms has to be based qualitative criteria, as they can provide information about the condition of various parameters in a firm that are very useful for credit evaluation. In addition, the classical quantitative criteria, i.e. the financial ratios can be employed by the multicriteria methods enabling the models to achieve as much as possible useful information.

We study the performance of AHP method for financial credit evaluation. The model adopts the analytic hierarchy process of Saaty to incorporate judgmental and quantitative assessments of credit risk factors which are considered important in the classification and measurement of credit risk. It arrays credit evaluation in three hierarchy levels. This model assigns priority weights to the variables using pairwise comparison at each level of the hierarchy. It computes these weights as the normalized eigen-vector from a matrix using the geometric approximation method. The core of the credit scoring procedure is the pairwise comparison of the criteria at a hierarchy level relative to the objective at the next level. The relative importance of the factors/variables are assessed on a scale of 1 to 9. A response of 1 indicates that the variables compared contribute equally to the objective and a response of 9 indicates that the contribution of one activity is significantly more important than the other.

We feel that two significant conclusions can be drawn from our study of AHP in credit evaluation: (1) comparing performance of the expert judgmental weight using AHP and the typical banker's weight on the credit evaluation. (2) the evaluation criteria includes both financial ratios, as well as qualitative criteria.