Credit Scorecard for Corporate Clients based on Industries
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Problem statement for 99th European Study Group with Industry

At the moment Bank uses different scorecard in dependence on type of client that respects specificity of client for more than six years. Our aim is to improve current scorecard and build statistical one which will respect diversity of industries in which clients operate.

Scorecards should be used for better decision making and to be predictive in separating good and bad clients, in which good are those with no negative behavior expected, and on the other hand for calculation of capital requirements as basis for implementation of Internal Rating Bases (IRB) System.

According to the nature of business that banks deal which is reflected in taking funds from depositors and their placing to clients through loans, it is very important to predict clients' behavior in order to protect depositors and shareholders' funds. A credit risk scoring is a tool used to estimate the level of risk associated with new applicants or existing clients. It is a model that contains the loan applicants characteristics that are either used to calculate a score representing the applicants probability of default, or to categorize borrowers into different default risk classes and serves as a primary measure of credit quality of an applicant and level of credit risk to which the bank is exposed.

The use of credit scoring has become standard as the banks are faced with the difficult task of predicting who will pay them back and who will not. Credit scoring is changing the way banks place loans and large banks are gain the market using credit scoring and processing applications through an automated and centralized system.

In order to attract new customers, and at the same time to be able to control potential losses one of the main challenge for banks these days is how to predict delinquency nonpayment clients. Risk management analyses information from credit applications or existing clients behavior and create a credit worthiness of a potential client profile based on the different type of information available. Development and implementation of statistical scoring model should bring multiple benefits to a bank such as selection of low risk customers, capital planning or reducing cost provisioning, and on the other hand automatization and consistency in credit decision making process, setting several of credit limits and improving overall credit portfolio management.

For building of credit scorecard very important are soft well as hard information about clients. Scorecard consists of both qualitative and quantitative characteristics which have different weights based on significance in prediction of client's future behavior. We use different kind of available data sources for variables in scorecard. Many of the information needed for scorecards are available in the bank core system. For example, some of qualitative variables such as management quality, years in business, market position and their position compared to the competition, etc. are based on accounts managers' opinion and are updated during application process or regular monitoring process. Metric variables such as liquidity, profitability, cash flow, trend in costs, etc. are ratios from balance sheet or income statement positions. Information about delay in payment could be taken from credit bureau report such as number of days in delay, or similar.

Each of variables has some attributes. For example, information about years in business is assigned into groups such as less than 3 years, from 3 to 5 years, etc. and each of them has been assigned number of points. As every variable has its own weight represented as percentage, the total score is the sum of each variable percentage multiplied with number of points for appropriate attribute.

We noticed that there are some differences in behavior of clients from different industries. Taking into account the fact of existence of significant differences between values of variables depending on the industry in which client operates is a special challenge to make scoring that respects that fact. For development of a credit scorecard very important aspects are:

- **Scorecard structure** – The main challenge for us is how to develop various kind of scorecards for clients based on industries in which they operate, but in order to keep predefined scorecard structure.
- **Number of clients** – For some industries we have a situation with a small number of default clients with large exposure, or a large number of default clients with small exposure, or small number of total clients in some industries.
- **Groups of industies** – The main aim of this research which Bank expect to get is how to group clients from different industries into appropriate larger groups considering specific characteristics of industries, for example not to put together clients from sale, maintenance and repair of motor vehicles and motorcycles with those from real estate activities, etc., and how to build appropriate scorecard for each of this groups.
- **Missing data** – We have a lot of information about clients but difficulty is that we have some clients with partially filled data in the system, in a way that we cannot find adequate replacement for them but to treat them as missing values.

At the end, after the final scorecards are defined, the question is how to set a cut off criteria as the minimum level of expectable bad rate based on a score.