

Chapter 47

Data Mining Used for Analyzing the Bankruptcy Risk of the Romanian SMEs

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ABSTRACT

The small and medium enterprises (SMEs) represent the backbone of the economy, playing a major economic and social role in the process of developing a dynamic economy. But the recent evolutions in the financial markets, the international financial crisis, the increased competition on markets, the lack of financial resources and the insufficient adaptation of many firms to the requests of the European market are new threats which can determine the bankruptcies of the Romanian SMEs. In this context, starting from the necessity to design an early warning system, we will elaborate a new model for analysis of bankruptcy risk for the Romanian SMEs that combine two main categories of indicators: financial ratios and non-financial indicators. The authors' analysis is based on data mining techniques (CHAID) in order to identify the firms' categories accordingly to the bankruptcy risk levels. Through the proposed analysis model they try to offer a real surveillance system for the Romanian SMEs which can allow an early signal regarding the bankruptcy risk.

INTRODUCTION

The importance of small and medium enterprise (SMEs) as the basis for establishing and developing a modern, dynamic and knowledge-based economy is widely recognized. Generally, small

and medium companies are more dynamic and flexible than the corporations, being able to respond quickly in a competitive market and to adapt to the structural changes in the global economy. But the integration process, the globalization and the new financial crisis imposes a higher adaptation effort for the SMEs, in general and for the Romanian SMEs, in particular.

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After 1990, Romania has made considerable progress in setting up an extensive policy framework to support the SME sector. There were developed a range of institutions, policy instruments, programs and resources in order to assist the small and medium enterprise development in Romania accordingly with the EU regulations. In 2002, Romania, together with other candidate countries, signed the Maribor Declaration and engaged to harmonize its policies for supporting the competitiveness of local companies to the provisions of the Lisbon Strategy. As an expression of Romania's international engagement, the National Development Plan 2007-2013 highlights the importance of restructuring and developing existing SMEs and the creation of new enterprises and defines the priority measures as improving the business environment, supporting access to financial resources and providing support services to and entrepreneurs. In the same time, the Ministry for SMEs, Trade and Business Environment (MSMETBE) is also responsible for ensuring Romania's compliance with its obligations under the European Charter for Small Enterprises.

Along with the positive evolutions in the Romanian economy (economic growth of 8.3% in 2004 and 7.9% in 2006), the SMEs sector from Romania registered an ascendant trend in the last years. In 2007, the SMEs predominated in the Romanian economy having a substantial contribution to the GDP (70%), to the budget incomes (about 60%) and playing a main role in job creation (60.7% of active population) accordingly with the Annual Report of MSMETBE, 2008.

But not all Romanian SMEs are prepared for acting their role of economy engine. The lack of their competitiveness is caused mostly by the lack of adaptation to the European standards or their incapacity to attract financing sources for investment in new technologies, new products and implementing the quality and the environment protection systems (Giurca et al., 2008). Despite the Government's measures to generate a favorable background for the development of

the SMEs and to improve their access to financing sources, there are still many deficiencies on the financial market. Therefore, the largest part of the planned investments is done on the basis of their own funds followed by the banking credit and other non-reimbursing sources as budget allocation or grants offered by EU.

The financial crisis represents another new threat for SMEs financing and growth. The clear signs about the global credit crunch make the access to external finance becoming much more difficult and very expensive.

Most of the Romanian small and medium sized enterprises are affected by the financial crisis mainly because of lower demand; the limited financial resources and the high dependence on a single credit institution; the difficult lending conditions; the dependence on the large firms because of the sub-contracting system; the high volatility of the exchange rate, etc. Also, the Romania SMEs have to face a financial deadlock partly because of the state through its debts towards the private sector and on the other hand, by other companies that become indebted, being created a vicious circle. Other effects of the financial crisis upon SMEs are the increasing unemployment, reduction of exports, lower investments, the reduction of the incomes to the state budget, and finally, yet importantly, the psychological effect of the market difficulties.

In the circumstances imposed by the financial crisis, the Romanian SMEs have to face the new challenges and should adapt their strategy to the new conditions. Therefore, an early warning system that could reveal the economic-financial situation and prevent the financial difficulties, could offer these firms a major advantage in the market competition.

On the other hand, the development of the informatics technologies and the using of the informatics applications for evaluation the risk and assisting the decisions generated a considerable volume of data to be analyzed. This fact was possible because the development of the data basis

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