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# Le performance dei modelli di previsione delle insolvenze in Emilia-Romagna: un'analisi comparata

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**ABSTRACT: (THE PERFORMANCE OF BANKRUPTCY PREDICTION MODELS IN THE EMILIA-ROMAGNA REGION: A COMPARATIVE ANALYSIS).** This paper falls within the studies about bankruptcy prediction models. Contrary to the most common and actual orientation in this field, that is developing new and always more reliable models, this study focuses on the usability of existing prediction tools in wide-scale investigations. In order to be proficiently implemented within wide-scale investigations, models must demonstrate: 1) efficiency and therefore feature both organizational and economic sustainability and 2) effectiveness, that is the capability to make timely and correct predictions. To comply with the first condition, the authors decided to focus on multivariate discriminant models, as both their usage and interpretation of results are known for being easy. On the other hand, the assessment of the second and third criteria is the purpose of this study. In fact, this paper aims at verifying the degree of effectiveness of three multivariate discriminant bankruptcy prediction models in predicting the operative status of firms in the Emilia-Romagna region. The models' performance was assessed through two different analysis: the first one aimed at verifying the models' predictive accuracy in correctly predicting the distress status of a sample composed by firms that went bankrupt between 2012 and 2016; the second analysis aimed at verifying the models' discriminant capacity through the application on a second sample equally composed by bankrupt and operative firms. The research was performed basing on an ex-post reasoning approach. In fact, the physiological or pathological status of the firms composing the samples utilized in the two analysis was known a priori. Hence, the assessment of the performance of the chosen models was made by verifying if their predictions corresponded with the real operative status of the selected firms. The obtained results show that Altman's model is highly suitable both for recognizing with adequate advance the distress symptoms of Emilia-Romagna's firms and for discriminating healthy firms from pathological ones, even if it is a model developed for medium- or big-sized American firms.

**KEYWORDS:** Bankruptcy prediction models; predictive accuracy; discriminant capability.

## 1. Crisi d'azienda, diagnosi e modelli di previsione: lo stato dell'arte<sup>(1)</sup>

Della "crisi d'azienda" non esiste una definizione univoca (Shepherd, 2005; Pretorius, 2009), tuttavia buona parte della letteratura nazionale ed internazionale è concorde nel ritenere che tale fenomeno abbia carattere dinamico (Giannessi, 1960; Müller, 1985; D'Aveni, 1989; Chowdhury & Lang, 1993; Sheppard & Chowdhury, 2005; Poddighe & Madonna, 2006). Più precisamente, in base a tale approccio, la crisi assume i connotati di un processo involutivo, nell'ambito del quale è possibile identificare una sequenzialità di più fasi caratterizzate da un grado crescente di gravità (Müller, 1985; Slatter & Lovett, 1999; Guatri, 1995; Cestari, 2009). È palese che di fronte ad un tale graduale incremento di complessità, nell'ottica della soluzione della patologia aziendale, sia quanto mai necessario il tempestivo riconoscimento dei sintomi del fenomeno critico, prima che raggiunga

<sup>(1)</sup> Il presente lavoro è frutto di un'elaborazione congiunta e, pertanto, deve ritenersi patrimonio culturale condiviso. Tuttavia, i paragrafi 1, 6 e 7 sono da attribuirsi a Salvatore Madonna mentre i paragrafi 2, 3, 4 e 5 a Greta Cestari.

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