Transfer Learning Using Logistic Regression in Credit Scoring

Waad Bouaguel*, Farid Beninel**, Ghazi Bel Mufti***

*LARODEC, ISG, Université de Tunis, Tunisie
bouaguelwaad@mailpost.tn

**LMA Futuroscope, UMR-CNRS 7348
fbeninel@gmail.com

***LARIME, ESSECT, Université de Tunis.
belmufti@yahoo.com

Abstract. The credit scoring risk management is a fast growing field due to consumer's credit requests. Credit requests, of new and existing customers, are often evaluated by classical discrimination rules based on customers information. However, these kinds of strategies have serious limits and don't take into account the characteristics difference between current customers and the future ones. The aim of this paper is to measure credit worthiness for non customers borrowers and to model potential risk given a heterogeneous population formed by borrowers customers of the bank and others who are not. We hold on previous works done in generalized discrimination and transpose them into the logistic model to bring out efficient discrimination rules for non customers' subpopulation. Therefore we obtain seven simple models of connection between parameters of both logistic models associated respectively to the two subpopulations. The German credit data set is selected as the experimental data to compare the seven models. Experimental results show that the use of links between the two subpopulations improve the classification accuracy for the new loan applicants.

1 Introduction

The credit risk is one of the major risks that a loans institution has to manage. This risk arises when a borrower doesn't pay his debt in the fixed due. To face up this kind of risk, banks' managers have to look for efficient solutions to well distinguish good from bad risk applicant.

Credit scoring is one of the most successful financial risk management solutions developed for lending institutions, this solution has been fundamental in consumer credit management since Durand (1941). Authors like Feldman (1997), Thomas et al. (2002) and Saporta (2006) defined the Credit scoring as the process of determining how likely a particular applicant is default with repayment.