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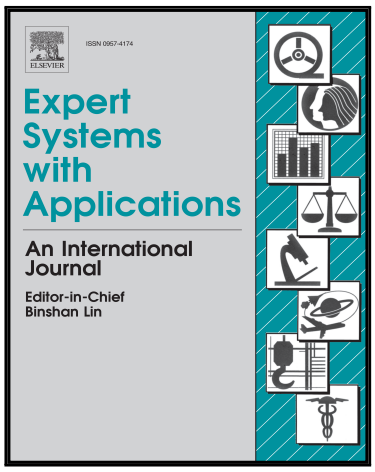

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Noura Metawa, M.Kabir Hassan, Mohamed Elhoseny

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Genetic Algorithm Based Model For Optimizing Bank Lending Decisions

Noura Metawa[1], M. Kabir Hassan[2], Mohamed Elhoseny[3]

[1,2] *College of Business Administration, University of New Orleans, New Orleans, USA*
[3] *Faculty of Computers and Information Sciences, Mansoura University, Mansoura, Egypt*
nmetawa@uno.edu, mhassan@uno.edu, mohamed_elhoseny@mans.edu.eg

Abstract

To avoid the complexity and time consumption of traditional statistical and mathematical programming, intelligent techniques have gained great attention in different financial research areas, especially in banking decisions' optimization. However, choosing optimum bank lending decisions that maximize the bank profit in a credit crunch environment is still a big challenge. For that, this paper proposes an intelligent model based on the Genetic Algorithm (GA) to organize bank lending decisions in a highly competitive environment with a credit crunch constraint (GAMCC). GAMCC provides a framework to optimize bank objectives when constructing the loan portfolio, by maximizing the bank profit and minimizing the probability of bank default in a search for a dynamic lending decision. Compared to the state-of-the art methods, GAMCC is considered a better intelligent tool that enables banks to reduce the loan screening time by a range of 12% to 50%. Moreover, it greatly increases the bank profit by a range of 3.9% to 8.1%.

Keywords: Lending Decision, Genetic Algorithm, Loan Portfolio, Bank Objectives

1. Introduction

It is clear that the financial crisis was accompanied by a reduction in the credit supply available to all customers (Aguilar et al., 2015). According to recent studies (Michael & Rohwedder, 2010 ; Judit & Wang, 2012),

Email address: Corresponding Author: Nmetawa@uno.edu (Noura Metawa[1])

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