Customer Attrition in Retailing - An Application of Multivariate Adaptive Regression Splines

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Abstract

The profit resulting from customer relationship is essential to ensure companies viability, so an improvement in customer retention is crucial for competitiveness. As such, companies have recognized the importance of customer centered strategies and consequently customer relationship management (CRM) is often at the core of their strategic plans. In this context, a priori knowledge about the risk of a given customer to mitigate or even end the relationship with the provider is valuable information that allows companies to take preventive measures to avoid defection. This paper contributes to the literature by proposing a model to predict partial defection, using two classification techniques: Logistic regression and Multivariate Adaptive Regression Splines (MARS). The main objective is to compare the performance of MARS with Logistic regression in modeling customer attrition. This paper considers the general form of Logistic regression and Logistic regression combined with a wrapper feature selection approach, such as stepwise approach. The empirical results showed that MARS performs better than Logistic regression when variable selection procedures are not used. However, MARS loses its superiority when Logistic regression is conducted with stepwise feature selection.

Keywords
Customer relationship management, Churn analysis, Data mining, Logistic regression, Multivariate adaptive regression splines

Biography

V. L. Miguéis is an Assistant Professor in the department of Industrial Engineering and Management at the School of Engineering of the University of Porto, Portugal. She received her PhD in Industrial Engineering and Management from the School of Engineering of the University of Porto in 2012 and received the master degree from the same school in 2008. Her research interests include customer relationship management, data mining, customer intelligence and forecasting. Her research specifically focuses on the use of data mining techniques to support customer relationship management. She has published papers in several international journals indexed in the Web of Knowledge, including Expert Systems with Applications and European Journal of Operational Research. She has taught courses in operations research, statistics and operations management.

Ana S. Camanho is an Associate Professor, and Pro-Director of the Master of Science in Industrial Engineering and Management of the School of Engineering of the University of Porto, Portugal. She earned B.S. in Industrial Engineering and Management from the School of Engineering of the University of Porto, and PhD in Industrial and Business Studies from Warwick Business School, University of Warwick, United Kingdom. She has published more than 30 papers in international journals indexed in the Web of Knowledge (ISI Science Citation Index). She has done research projects in the following sectors: banking, retailing, healthcare, education, fisheries, construction industry, regulation of electricity distribution companies and urban quality of life. Her research interests include performance assessment, Data Envelopment Analysis, Productivity measurement, Data mining and Customer Relationship Management. She was vice-president of the Portuguese Operational Research Society (APDIO) and Pro-director of the PhD program in Industrial Engineering and Management of the School of Engineering of the University of Porto.

João Falcão e Cunha is a Full Professor at University of Porto, School of Engineering. He holds a PhD in Computing Science from Imperial College London (1989), an MSc in Operations Research from Cranfield University (1984) and a degree in Electrical Engineering from University of Porto (1983). His research interests

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