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Analysis of the determinants of profitability and loyalty of the beneficiaries of a dental plan using Classification and Regression Trees

Sílvia Maria Dias Pedro Rebouças (Speaker)

Universidade Federal do Ceará, smdpedro@gmail.com

Aline Rodrigues Martins

Adtalem Educacional do Brasil, aliner_martins@yahoo.com.br

Rômulo Alves Soares

Universidade Federal do Ceará, romuloalves61@gmail.com

Abstract

The present study aims to verify the main determinants of the profitability and loyalty of the beneficiaries of a given Brazilian dental plan. The sample used is comprised of 42,784 beneficiaries who joined the plan between January 1, 2006 and December 31, 2012, which were active on April 30, 2013 and belonged to the Fortaleza branch. The interval between December 2012 and April 2013 represents the grace period contemplated in the dental plans marketed by this operator. The beneficiaries who were in the grace period were not included. To achieve the objectives of the research, we used Classification and Regression Trees (CART). This method is based on the successive binary division of data based on the sampling results of independent variables, seeking the creation of subsets that are more homogeneous with respect to the dependent variable. Data analysis also included descriptive statistics, t-tests for independent samples, ANOVA, correlation analysis and Chi-Square tests to characterize the sample, to compare groups and to analyze relations between variables. The CART multivariate technique allowed the tracing of customer profiles with similar profitability or loyalty and quantifying the importance of each determinant in the regression, in the case of profitability, or in the classification, in the case of loyalty. Profitability was assessed by the 12-month accumulated contribution margin of each beneficiary. The means of payment, the segment in which the beneficiary operates and contract time are the main determinants of profitability. To predict customer loyalty, the key determinants are contract time, contribution margin and means of payment. It is concluded that this operator should focus on loyalty actions in the months of the first year of the contract.

Keywords: Dental plans, profitability, loyalty, classification and regression trees.