ABSTRACT

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In order to keep profitable in a competitive telecommunications market, telephone operators rely on business metrics, such as customer turnover rate (churn) and Net Promoter Score (NPS). Recently, telecommunications in Brazil and worldwide have used the NPS concept for managing customer relationship. Mobile network operators aim to minimize degradation of network quality in order to improve the overall quality of the experience. However, the number of measurement points in a network is potentially massive and it is highly desirable to use machine learning techniques to extract the most important actionable network resources that are likely to cause poorly perceived network service. This work explores machine learning techniques with Artificial Neural Network, Random Forest and XGBoost algorithms to predict NPS, and, based on NPS, help prevent churn. For this purpose, a sample base of 82,618 customers from an operator in Brazil was used, which includes real information on network and business usage. The results show that it is possible to employ a wide variety of network and business metrics to train a machine that allows to understand the perception of customers in order to maintain them. The work produced discoveries that have vital implications for operators, highlighting the presentation of what are the main network and business indicators that affect the customer experience. No other work with the same research aspect was found so that we could make comparisons.

Keywords: Machine Learning; RNA; Artificial neural networks; Random Forest; XGBoost; Churn; NPS.