Expanding Behavioural Variables to Predict Churn in Season Ticket Holders

Adam Karg, Swinburne University of Technology
Ali Tamaddoni, Deakin University
Heath McDonald, Swinburne University of Technology

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While a vital source of revenue for professional sport teams, research shows that teams can lose significant volumes of season ticket holders (STH) at the end of each season (McDonald, 2010). While one approach to recover this loss is to acquire new STH from single ticket buying consumers (George & Wakefield, 2018), an alternative is to identify potential churners and incentivize them to renew. While the sport industry has advanced its use of databases and CRM platforms as part of analytics-led solutions, prior academic research seeking to predict STH churn has largely used classic methods and variables limited to survey obtained data. From this work, variables including tenure, games attended or utilisation of the ticket, and self-reported attitudinal measures have been identified as antecedents to churning behaviour (McDonald, 2010; McDonald, Karg & Leckie, 2014). While this approach has been an essential step to demonstrate the value that churn prediction can deliver, we seek to advance past work by focusing on expanding the behavioral variables used to predict STH churn and guide managerial action.

Data from two professional sport teams was used to identify variables contributing to the predictive accuracy of churn identification. STH databases over a period of four years (n=50,000 per year minimum) were analyzed. Databases included product information (e.g., seat type and price), demographics and information on match attendance and outcomes (e.g., specific games a STH attended, whether the team won or lost). From these base variables, timing of the last attendance, time between attendances and variables capturing year on year change in price or level of attendance were also developed. Predictive models using logistic regression and ensemble machine learning classifiers with decision trees as base classifiers (Gupta et al., 2006; Lemmens & Gupta, 2013) were built and tested.

Confirming past work, results showed tenure and match attendance were important variables for predicting churn. However, unique to past work, variables beyond the count of games or utilization were also critical. Specifically, the outcome of games attended, timing of and between attendances, and year on year changes in attendance and spend emerged as important predictors of STH renewal. Additionally, differences in predictors and accuracy of models were found across product type. In total, models employed across teams and products correctly identified between 69% and 75% of all churners.

The research utilises a new approach for STH churn estimation using databases and behavioral variables as inputs and utilising data mining as part of the prediction technique. The research expands indicators from past work, operationalizing product and attendance related behaviors to provide guidance on the identification and management of churn risk. Implications for pricing, product and communications interventions within and post season are advanced. The study encourages a focus on a wider range of techniques and variables in future work (e.g., service interactions, merchandise purchase or communications) to further advance prediction as a form of better understanding and managing STH churn.